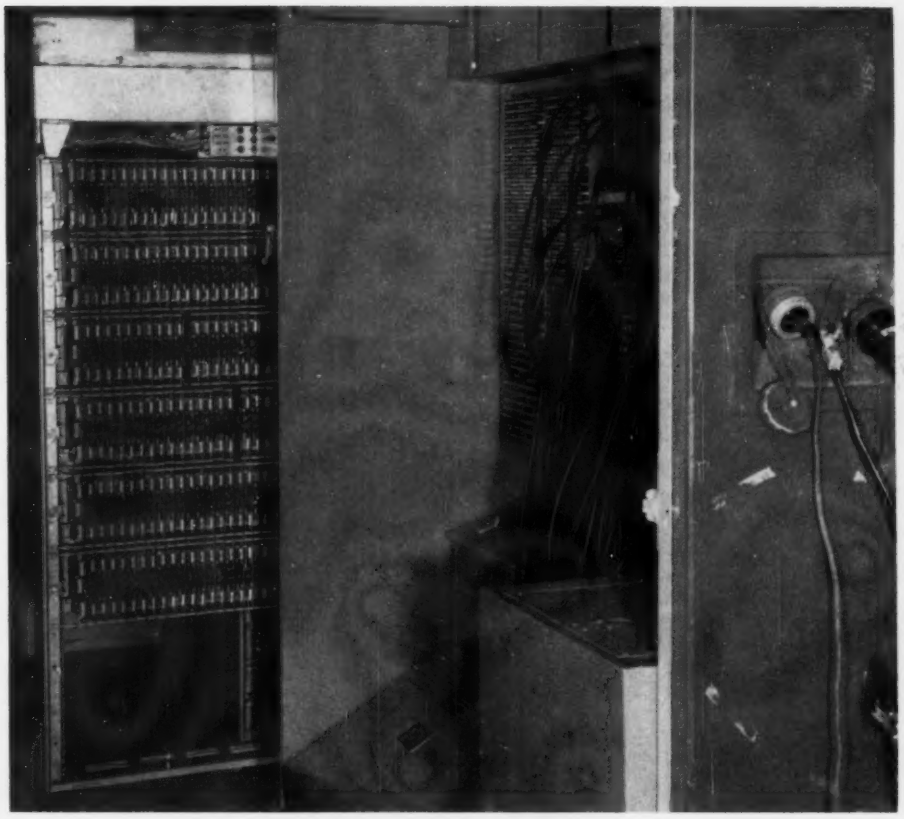
MARCH 12, 1960
VOL. 158 — NO. 11

Telephony®

THE JOURNAL OF THE TELEPHONE INDUSTRY



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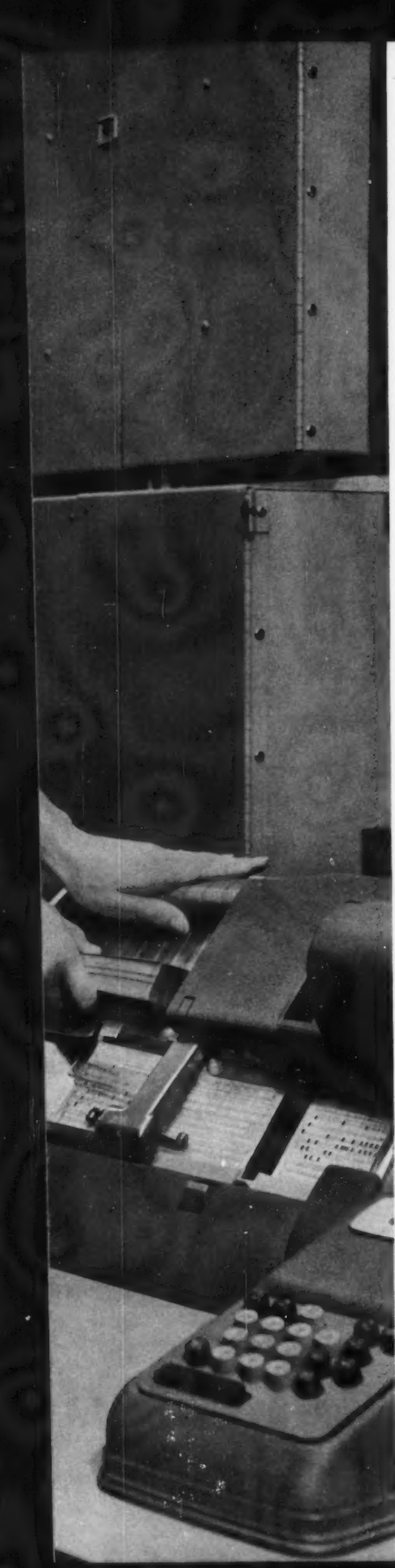
Guaranteed Circulation This Issue
13,489 of Which 12,935 Is Paid

ELECTRONIC SWITCHING

U. S. Army Signal Corps gets its first electronic communication switching center (shown above). One of the vertical equipment drawers is pulled out to show arrangement of components on printed wiring cards. See page 70.

MANAGEMENT • PLANT • TRAFFIC • COMMERCIAL • LEGAL • ACCOUNTING

Flexowriter
TICKET WAITING
ALARM



"THERE IS NOTHING FINER THAN A STROMBERG-CARLSON"

Your profit

goes up as your revenue increases with XY® Toll Ticketing

There are many reasons why your DDD profit will keep pace with growing revenue. Here are three major ones:

1. Your profit goes up because the system is fully automated . . . requires a minimum of labor to collect information to bill subscribers for toll service. No paper tapes to replenish. Billing machines are operated directly from the toll ticketing equipment.

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STROMBERG-CARLSON
A DIVISION OF **GENERAL DYNAMICS**

FLASHES AND PLUGS

'ORRIBLE EVIDENCE! Ruth Beccles, writing in *The Post*, British Journal of the Union of Post Office Workers, says, "A cold, unlike a headache, cannot be kept secret. For cough medicine, throat tablets, and pastilles share the same unpleasant feature—they all smell 'orrible."

In a telephone exchange in Britain, an operator who had a not-too-severe cold tried "to do the decent thing and not pass it on" to her colleagues. She shared a whole tin of throat lozenges with the other telephonists in her section.

Report of the girls all popping colored pellets into their mouths, which might be construed as non-regulation sweets, reached the attention of the supervisor in the section first, and then the division supervisor, who might have reprimanded the operators.

Supervisory words were never necessary. The air in the exchange was so impregnated with "gases" from the lozenges that, "no germ had even a sporting chance." The division supervisor accepted the invisible, intangible, and overpowering evidence. She merely suggested to the girls that a salt water gargle was cheap, effective, and *odorless*.

•

NOT HOLDING HIM UP, ANYHOW. Now that communications are launched on the "satellite" age, the real planets and life on them may take on various aspects of the earth man's world and his family.

The story recounted in *The New Jersey Bell* may not be so far-fetched, after all. There was the little planet that broke out of his orbit, danced around the sun, cut a few capers on the moon, and in general, was un-settling the planetary way of life.

Little planet's mother, taking a jaundiced adult view of his actions, called out to him, "Junior, whatever out of this world are you doing?"

To this, small planet gleefully replied as he raced toward her, "Look, Mom, no gravities!"

•

YOU GET THE BEAT, MAN? Reuters News Service, in a story datelined Jakarta, Indonesia, reported that the police in East Java uncovered a case in which stolen telephone wires ended up as guitar strings.

Two men from a place called Solo were said to have cut the telephone wires between Solo and Jogjakarat, and turned over the wires to a music shop.

Police raided the music shop and seized 19 guitars, which, they said, were strung with some of the stolen telephone wires.

To which a wag from "Along the Lines" in Canada's *Bell News* replies, "We dig you're from Solo, man, but phone-string is from nothing on a 'G' note when you're swinging solo. Way out Soloists, if you read me?"

CHANGE OF ADDRESS

Please notify your local postmaster and the Circulation Department of TELEPHONY of change of address. Change cannot be made without the old as well as the new address. Allow three weeks for change of address to become effective.

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
Since 1901

March 12, 1960

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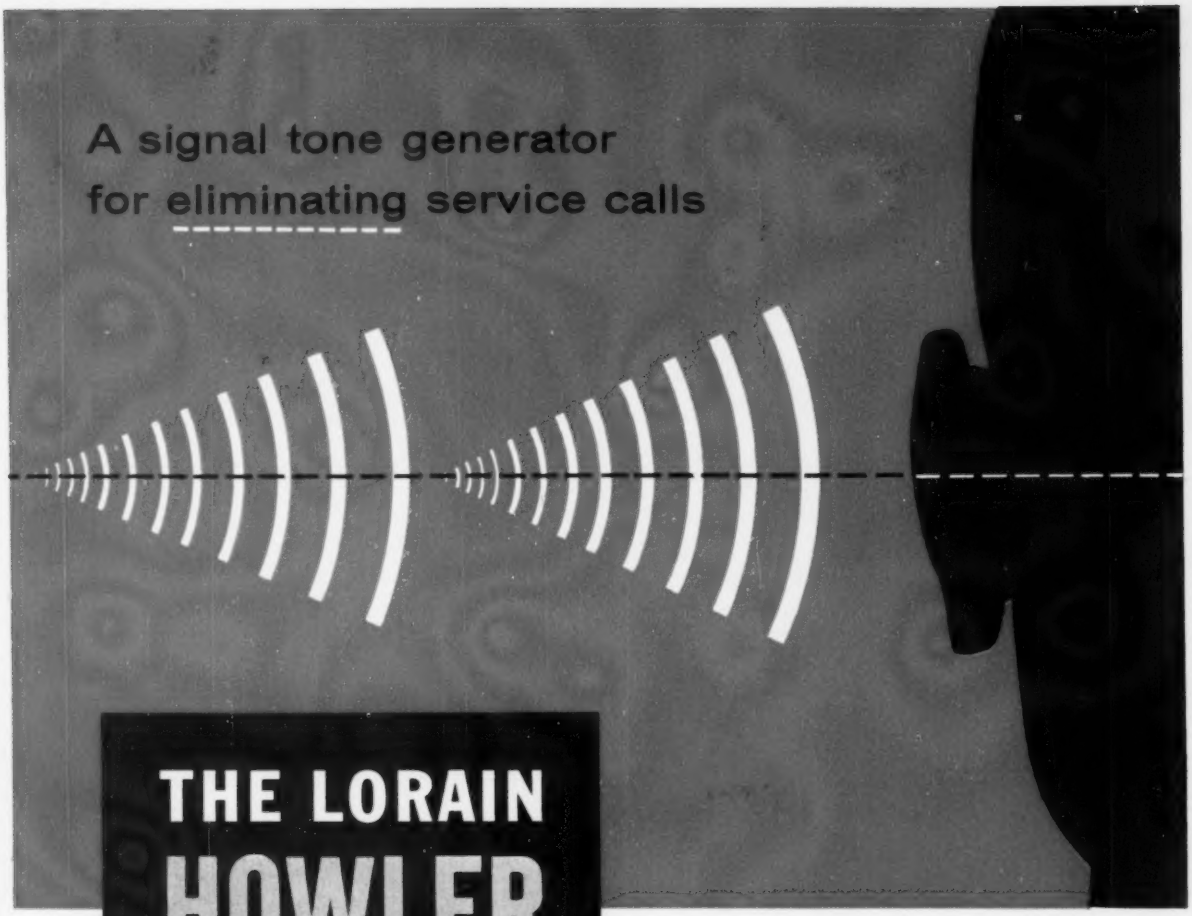


THE LORAIN HOWLER

Write for Bulletin 167A

THE TONE THAT HANGS THE PHONE

The Lorain Howler's unique tone can't go unheard, can't be mistaken for any familiar sound. It begins softly on a high note, gradually declines in pitch while it increases in volume. It covers the full frequency range where both ears and receivers are most sensitive.

SAFE FOR EAR, SAFE FOR EQUIPMENT

The slow increase in signal volume allows plenty of time for removal of the receiver from the ear. And the Howler's distinctive tone can be sent out at a much lower voltage than is customary, protecting against damage to receivers or cable cross-talk.

EASY START, AUTOMATIC STOP

The Howler is plugged into the line at the protector frame or test desk. A push-button or a remote key starts it. A relay automatically stops the Howler and restores the line to service when the receiver is replaced. AC and DC input. Signal output: 0—40 volts, 2.5 watts.

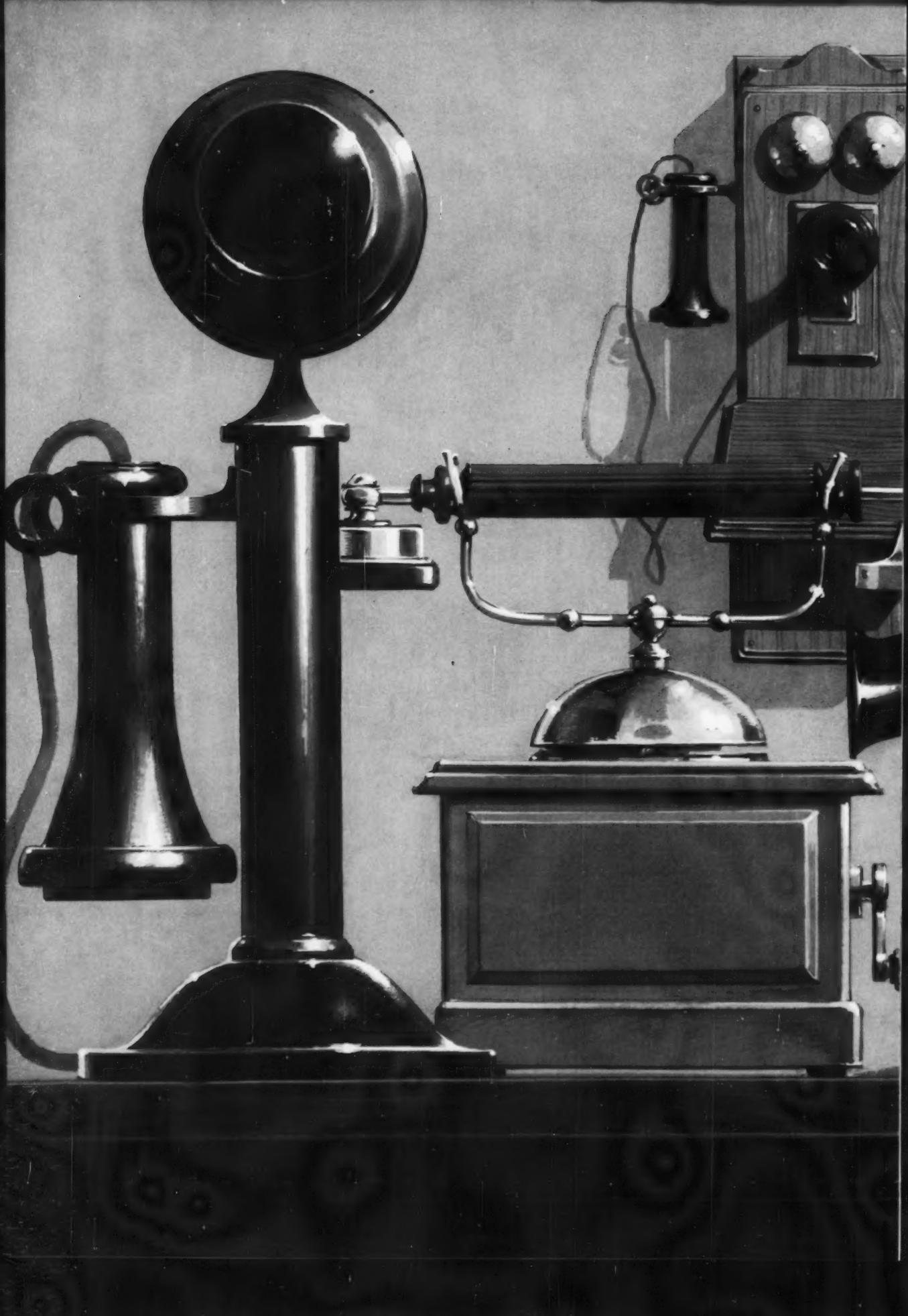
THE ONLY COMPLETE LINE OF POWER EQUIPMENT FOR COMMUNICATIONS

our equipment is sold through leading telephone distributors

FLOTROL SUB-CYCLE

LORAIN *Products Corporation*

1122 F Street Lorain, Ohio Phone: ATlantic 8-9191



Are you operating a telephone company or an antique shop?

Remember the "old" telephones? Where do you see them today? In antique shops! They are collectors items—museum pieces—nostalgia nudgers!

And what about the telephones you're buying today? If you're buying Ericofons, you're getting the only modern telephone on the market. If you're still buying old-fashioned two-piece phones, you're buying "built-in obsolescence"—it's only a matter of time now before these phones, too, become "antiques," museum pieces. The Ericofon will still be modern long after "today's" phones are only memories!

Next time you buy telephones, stop and think—think hard—do you want to buy instruments that are **already becoming obsolete?**

When you order telephones, order Ericofons—the only modern instruments in the world today—and available only from

THE DYNAMIC FORCE IN THE TELEPHONE INDUSTRY

NORTH ELECTRIC COMPANY

Galion, Ohio

NORTH

60-T-2

AE-Lenkurt has everything you need for profitable circuit expansion

Dealing with AE-Lenkurt is mighty good assurance of getting things done *the right way* from start to finish. That's because we offer a complete "package," designed to meet your precise needs.

You deal with experienced *telephone* engineers who understand your problems, and stand ready to relieve you of all planning, engineering and installing details.

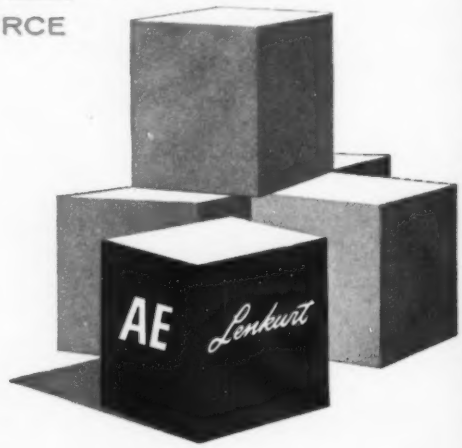
Our engineers will give you *impartial* recommendations on the type of equipment that will serve your needs most efficiently and economically for the long pull. That's because we offer a *complete* line of communications equipment, and we have no reason to "push" any one system.

With Lenkurt equipment you can add as you go, the "building-block" way, with full assurance that what you buy today will work with what you buy tomorrow.

In addition, AE can be your headquarters for everything from cable to carrier, from micrometers to microwave—separately or in a completely integrated package.

Want more facts on progressive planning? Then call your Automatic Electric representative, or mail coupon today.

ALL YOUR COMMUNICATIONS NEEDS FROM ONE DEPENDABLE SOURCE



Automatic Electric Sales Corporation,
Northlake, Illinois
Attention: Mr. T. B. Collins, Manager

Please send literature on:

- ☐ Lenkurt Carrier
- ☐ Lenkurt Microwave
- ☐ Lenkurt Mobiltel
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- ☐ AE Telephone Equipment and Supplies

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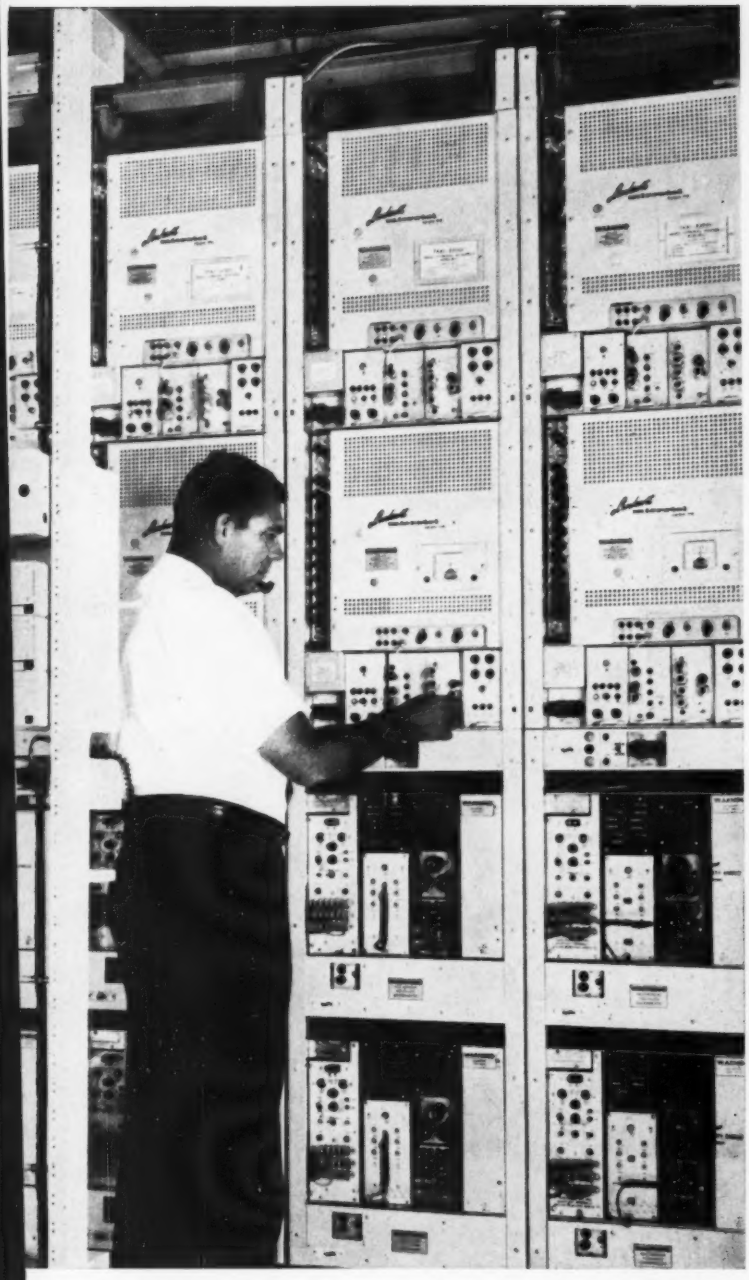


Lenkurt Microwave, for instance–

Lenkurt *microtel* Type 74A is *telephone-engineered* to meet all telephone standards.

With Lenkurt 45BX Carrier, a single 6000-mc unit can accommodate from 4 to 240 channels.

Check these features:

Economical: Power consumption only 250 watts. Uses fewer tubes and operates from office batteries or power line. Automatic frequency control dispenses with need of ovens or blowers.

Efficient: Makes maximum use of available frequency spectrum; has higher power output; requires lower input (system gain 10 times that of most other equipment).

System Expansion: With r-f circulators 2, 3 or 4 terminals can be added to same antenna system, quickly, economically.

Circuit Flexibility: Back-to-back terminal equipment permits dropping and reinserting of channel groups at repeater points.

AUTOMATIC ELECTRIC

Subsidiary of
GENERAL TELEPHONE & ELECTRONICS

GENERAL SYSTEM

THIS **LEICH** PABX
FEATURE
SELLS
BUSINESS SUBSCRIBERS

These LEICH PABX's Grow with

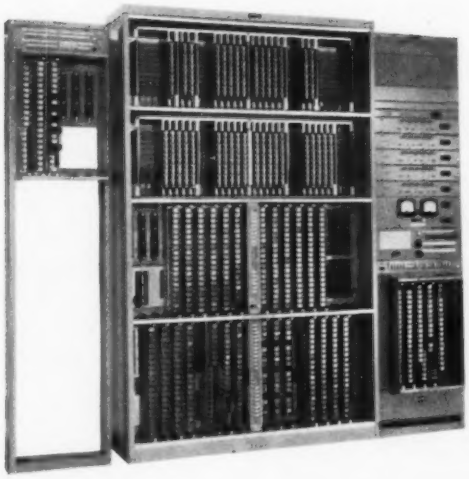
...the expandable 100C and 100T

Leich 100T Attendant's Turret (28-trunk model)

Leich 100C Floor-type Attendant's Cabinet

LEICH GENERAL SYSTEM
Subsidiary of
GENERAL TELEPHONE & ELECTRONICS

Your Subscribers



All-relay switchboard furnished with Leich 100C and 100T PABX's. For further expansion, additional 100-line bays may be easily installed.

When a business expands, the Leich 100C and 100T PABX's can expand, too—quickly and economically. That's one reason why your fast-growing business subscribers will sell themselves on Leich PABX's. You add lines and links by simply jacking them in—no soldering and wiring by factory installers. When expansion over the capacity of initially installed bays is required, more 100-line bays may be added. In addition, these units offer fast extension of calls . . . all-relay dial switchboard for high traffic capacity and worry-free service . . . standard telephones . . . low price . . . fast delivery . . . and a wide variety of standard and optional service features.

You have a lot to sell with Leich. Ask for our PABX sales kit to help you do a bang-up job!

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EAST: 3651 CONNECTICUT AVENUE, YOUNGSTOWN, OHIO

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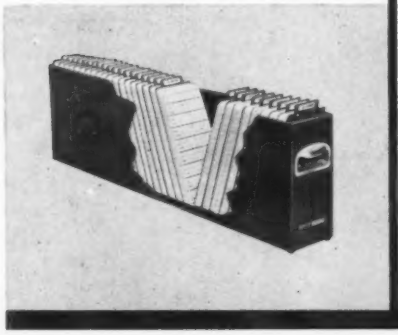
manufacturers of telephones, switchboards and related apparatus since 1907

ONE FINGER ACCESS to line cards is assured by Supported V-Angle that opens and stays open at any card. Measured space control insures space for refiling.



ASSIGNMENT-REPAIR DESK conveniently centralizes cable, terminal and line card records. Saves waste motion and affords generous desk-top work surface.

COMPACT TUBULAR STAND This space-saving unit handles up to 3000 stations. Provides convenient sliding work shelf. Rolls on ball-bearing casters.

ACME VISIBLE Telephone Record Systems speed installation and repair service

Today, with a record number of telephones in service—and with continued heavy station growth—efficient paper work and quick reference systems are vital. Many central offices have upped their efficiency by using Acme Visible Systems, designed in partnership with telephone operations experts.

ACME VISIBLE

Serving all departments of telephone companies
ACME VISIBLE RECORDS, Inc.
4003 West Allview Drive, Crozet, Va.

Please send free literature on your systems for telephone records.
We have _____ line cards and _____ cable and terminal records.

NAME_____ TITLE_____
COMPANY_____ ADDRESS_____
CITY_____ ZONE____ STATE_____

The thrifty answer to top performance...

Low-Cost

Copperweld® O-Eighty-Thirty

TELEPHONE LINE WIRE

O-Eighty-Thirty is specifically designed to give you thrifty savings and top performance for your subscriber loops and secondary toll lines. Its initial cost is practically the same as ordinary wire. When you string this light-weight, easy-to-handle line wire, you gain substantial economies—lower installation and maintenance costs as well as reduced expenditures for poles and hardware.

Excellent voice transmission is assured with O-Eighty-Thirty. In fact, its talking qualities are far better than any other high-strength wire of comparable size. In addition, it's non-rusting—has permanent high strength that permits safer long spans. As a bonus value, O-Eighty-Thirty is ideally suited for conversion to carrier circuits.

For prices, sag data and staking tables, write us today.

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WIRE AND CABLE DIVISION *Glassport, Pa.*

For Export: COPPERWELD STEEL INTERNATIONAL COMPANY, New York

SOLD BY LEADING DISTRIBUTORS

LARK THE WITH ALL SIX FOR TELEPHONE

HOW DO THEY COMPARE? (specific figures)	STUDEBAKER
Miles per Gallon	24.5 in general sales work
Oil Consumption	None between changes
Routine Maintenance	5.2 mils per mile vs. 18.4 mils
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Parts	1.5 mils per mile vs. 9.0 mils
Tire Mileage	Over 20% better on original tires
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Space Saved in Parking Area	5 cars in the space of 4 others

ONLY COMPACT ADVANTAGES FLEET USE

LARK PRESENTS PROVEN FACTS, NOT HOPEFUL CLAIMS— ON 6-PASSENGER CARS, NOT 5-PASSENGER SUB-COMPACTS!

1. LOWEST NET COST PROVEN by original price, also official trade-in value. Depreciation on Lark fleet model 17%—best of its class. (New compacts have no resale value established yet.)

2. LOWEST OPERATING COST PROVEN by actual records of fleet operators all over the country. "Save $40 a month on each Lark" (equipment sales company, California)—"Savings on each cab would buy a new cab in 2½ years" (taxi fleet, Massachusetts).

3. LOWEST MAINTENANCE COST PROVEN by fleet records. "Saving 33%" (taxi fleet, New York)—"Over 25,000 miles on each Lark in severe Police service—with minimum maintenance" (police department, Indiana).

4. LOWEST REPAIR COST PROVEN by fleet records. "2.1 mils per mile, against 3.2 mils per mile" (car rental, Colorado)—"No repairs, no new parts, after 10,000 miles on each Lark" (telephone company in Oregon).

5. LOWEST INSURANCE COST PROVEN by fleet operators' records (most insurance companies offer 10% or 15% premium discount on Lark-size cars, same savings possible if you self-insure.) "Have lowest available rate" (taxi fleet, Minnesota)—"Lark costs 20% less in our self-insurance plan" (bakery fleet, Arkansas).

6. BEST DRIVER ACCEPTANCE PROVEN by fleet owner reports. "In all cases our customers have been very pleased with the performance and appearance of The Larks, and we are getting repeat requests for them, the surest sign of satisfaction." (car rental, Ontario)—"All drivers prefer Studebakers to all other units" (taxi fleet, Wyoming).

We invite you to make us prove these advantages — from records of companies in your own field of business. Send this coupon!

udget-wise buyers
LOVE THAT
LARK
BY STUDEBAKER

SEND ME PROOF OF LARK SAVINGS

Please print. Send to Fleet Sales Division, Studebaker-Packard, South Bend 27, Indiana.

NAME_____

TITLE_____

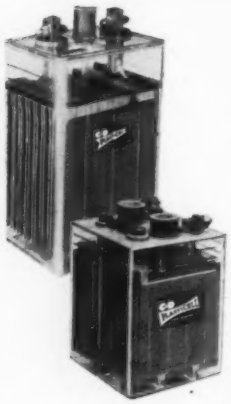
COMPANY_____

ADDRESS_____

f 3-12-60

WHERE ELSE
can you get batteries that give you all these features?

1. **Full .266″ thick plates (not just .156″ or .220″)**
2. **Triple insulation (not just dual)**
3. **14-year (PlastiCell)* or 25-year (PlastiCal)® life in full float service**



Get the full story—

Bulletin T-532:
"C & D PlastiCal® Batteries For The Communications Industry"

Bulletin T-533:
"C & D PlastiCell Batteries For The Communications Industry"

Comprehensive new battery bulletins detail outstanding C & D construction advantages . . . give complete rack data . . . display the full lines of C & D PlastiCell (10 to 1680 A.H.) and PlastiCal (50 to 1680 A.H.) telephone batteries. *Write for your copies today.*

Only from C & D!

Thickest, heaviest plates in the industry pack extra capacity, extra life! They are wrapped in woven glass mats, perforated vinyl retainers and have microporous plastic or rubber separators . . . active materials just can't shed away.

That's what you get in C & D PlastiCell* and PlastiCal® telephone batteries. PlastiCell lead-antimony grid batteries are built to give you full 14-year life. Advanced PlastiCal *lead-calcium* grid batteries: 25 years. And PlastiCals require watering less than *once a year!*

Add the advantages of C & D suspended and supported plate construction, *Hi-Impac* covers, transparent, high-heat resistant plastic containers, Plastite Post Seals, and Saftee-Vents . . . and you know why telephone men say: "C & D is your better battery buy."

C&D

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of Conshohocken, Pa. . . . Attica, Ind.
DIV. THE ELECTRIC AUTOLITE CO.

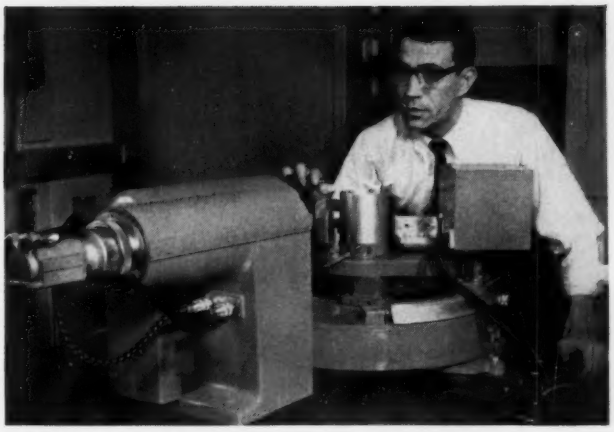
Sales and Service Offices in Principal Cities from Coast to Coast

Manufacturers of Dyna-Clad® Industrial Batteries • PLASTICELL® and PLASTICAL® Batteries for Communications, Control and Auxiliary Power • Producers of Autolite® Silicon Chargers

*Trademark

HE X-RAYS WOOD...

to help make telephone poles last longer



Chemist Jack Wright developed the use of this X-ray fluorescence machine for testing the concentration of preservatives in wood. Here he bombards a boring from a test telephone pole with X-rays.

This Bell Labs chemist is using a fast, new technique for measuring the concentration of fungus-killing preservative in telephone poles.

A boring from a test pole is bombarded with X-rays. The preservative—pentachlorophenol—converts some of the incoming X-rays to new ones of different and characteristic wave length. These new rays are isolated and sent into a radiation counter which registers their intensity. The intensity in turn reveals the concentration of preservative.

Bell Laboratories chemists must test thousands of wood specimens annually in their research to make telephone poles last longer. Seeking a faster test, they explored the possibility of X-ray fluorescence—a technique developed originally for metallurgy. For the first time, this technique was applied to wood. Result: A wood specimen check in just two minutes—at least 15 times faster than before possible with the conventional microchemical analysis.

Bell Labs scientists must remain alert to *all* ways of improving telephone service. They must create radically new technology or improve what already exists. Here, they devised a way to speed research in one of telephony's oldest and most important arts—that of wood preservation.

Nature still grows the best telephone poles. There are over 21 million wooden poles in the Bell System. They require no painting, scraping or cleaning; can be nailed, drilled, cut, sawed and climbed like no other material. Scientific wood preservation cuts telephone costs, conserves valuable timber acres.

BELL TELEPHONE LABORATORIES

World Center of Communications Research and Development

What's good about Warren ringing generators...

without any ringing generalizations

A spare generator for emergency use is shown in the space second from left.

All right — no ringing generalizations. Just facts — and here they are:

FACT #1 — Warren Transistor Ringing Generators are battery powered, multi-frequency, transistor ringing generators. They provide stable, continuous, on-frequency ringing in the harmonic, synchromonic and decimonic series for up to 4,000 lines (25 watt models) or 8,000 lines (50 watt models).

FACT #2 — They offer longer life — each component is conservatively derated for trouble-free operation, designed for 30 year life.

FACT #3 — They are more stable. A unique zero phase shift oscillator holds all ringing frequencies to a drift of less than ⅙ of a cycle, eliminating the need for any frequency adjustment.

FACT #4 — They are more compact, with the most space-saving design available — requiring only 10½" vertical space on standard relay racks.

FACT #5 — They offer up to 80% full-load efficiency. This means **BIG power savings** — just ⅓ to 1/10 the power required by other ringing generators.

Need more facts? They're yours for the asking. Just write or call (collect):

WARREN TMR 50 (50 watt, 5 frequency ringing generator)

WARREN MANUFACTURING WM

THE WARREN MFG. COMPANY, INC.

LITTLETON, MASSACHUSETTS - TEL. HUnter 6-3511

FIRST IN TRANSISTOR PRODUCTS FOR THE TELEPHONE INDUSTRY — SOLD THROUGH LEADING TELEPHONE EQUIPMENT MANUFACTURERS

IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR
AND EDITOR, PUBLIC UTILITIES FORTNIGHTLY

Poses question of whether reform of FCC procedures would be a strait jacket upon FCC. . . . Congress must decide who is to have responsibility for enforcement. SEC announces new policy for companies using accelerated depreciation.

HEARINGS were scheduled to start Mar. 15 before the House Communications Subcommittee of the House Interstate Commerce Committee on various bills to "reform" FCC procedures. There are several bills on the subject in both the House and the Senate, including one (H.R.4800) by the chairman of the house committee, Representative Oren Harris (D., Ark.). The over-all purpose of these legislative proposals is to prevent or eliminate undue pressures on the FCC.

The revelations of the House Subcommittee on Legislative Oversight—also headed by Harris—have shown clearly over the past two years that improper influences have been brought to bear, from time to time, on both the FCC commissioners and staff. In at least one situation a resignation under fire and criminal proceedings have resulted.

The difficulty of dealing with any such problem through strictly statutory changes is something that should have been made very clear to the American people by the fiasco of the 18th "prohibition" Amendment to the Constitution. You simply cannot legislate morals; and any law which is not accepted as just and necessary by a large proportion of the population cannot be enforced. It is essentially a problem of morality or personal integrity which is involved in these recurring ugly charges of bribes, favoritism or undue influence.

Nobody, whether a commissioner or staff member, who is not an honest man in the first place, can be made so by passing a law. And if he *is* an honest man, he needs no law to tell him that he should resist certain temptations which are almost bound to come, sooner or later, to everyone in an important and responsible public post. Obviously, the FCC with its control over the billions of dollars invested in radio and TV industry activities—to say nothing of the even greater investment in telephone, telegraph and other commercial communications activities, is a constant target for sharp practitioners.

In one of the more far-reaching bills introduced on this subject, the "reform" would be accomplished by turning the FCC into a sort of special administrative court at the top level. But changing the status of a commissioner to that of a federal district judge would, of itself, be no guarantee of absolute purity of future conduct. Federal judges have been impeached for taking bribes in the past. It could happen again.

And there is the danger that the other changes involved in turning the quasi-judicial functions of the FCC into the work of a federal administrative court might turn out much worse than the present set-up, for various practical reasons. Inflexible court rules of evidence and legal procedures could slow down, if not paralyze, the heavy routine chores of the FCC. And these are many—in the complicated and technical field of radio and TV licensing and renewals. Complaints from the bar, in the past, have usually been to the effect that these operations do not move fast enough, as it is.

The bill by Representative Harris does not go so far. It would provide fines and penalties for anyone, commissioner or staff, regulated interests, lawyers, etc., attempting to exert, or yielding to improper influences. Former commissioners or staff members would be forbidden, for a definite period, to practice before the commission or engage in any case in which they had acquired inside or confidential knowledge or information by reason of former official associations.

But none of these efforts to punish sins, so to speak, get down to the real problem of determining just what is improper influence in a given situation. It is an elusive objective. There are many instances of public officials performing their duties with scrupulous honesty and impartiality for years and years, without feeling that they had to forego intimate social contacts and occasionally, lavish hospitality. On the other hand, petty larceny brands of favoritism can sometimes be had for a trifling gift. It is the intent, rather than the number of dollars involved which brands such transactions.

Many years ago, when the FCC was split into three divisions, and the telephone division was under former Chairman Paul A. Walker, a rather detailed directive on this subject was circulated among FCC employes. They were advised not only to refuse all hospitality from regulated interests or their agents, but even to avoid social contacts which might be embarrassing or result in opportunities for improper influence. It caused a certain amount of resentment. As one FCC official at that time expressed it to this writer, "It makes me feel as if I'd sell my soul for a ham sandwich."

The spirit of such discipline was undoubtedly righteous, but the implication that a commissioner or staff member would compromise his honor for petty favors did not sit very well. The

social strata and mores of present day Washington are such that a certain amount of social contact and hospitable exchange between the regulators and "regulatees" can hardly be avoided without one getting a reputation as an eccentric. For example, the ordinary operations of the FCC bar association provide a very valuable medium of exchanging useful ideas between the commission and staff, on one hand, and the practicing bar on the other. But, such activity can hardly take place in a cafeteria atmosphere. Life-long friendships, former professional partnerships, etc., cannot, and should not, become suspect just because one party happens to become employed by the FCC.

The puzzle of finding and rooting out improper influence is as old as the human race. Aside from making outright bribery a crime by law—which it is already—efforts to pinpoint details by clumsy legislative process can turn out to be of little value and even self-defeating. FCC Chairman John Doerfer, who has always taken a forthright position about this, seems to feel that one's own conscience is the best guide. Doerfer has refused to be pressured or become hypocritical about this, even though the continued controversy of the past two years has thrown a spotlight on everything a member or employe of the FCC does, from checking into a hotel to opening a Christmas present.

Any man who is reasonably intelligent knows well enough when he is being subjected to improper influence. He does not have to have a statute or regulation or blue print spell it out for him. If he is a person of integrity, he will know what to do under the circumstances, whether it be to put on his hat and walk out, or merely change the subject of the conversation. If he is not a person of integrity, if he is prone to yield to the lure of venality, all the wisdom of Solomon could not devise a law which could prevent him from doing what he wants to do.

The Responsibility of Ethical Enforcement

Aside from the problem of getting the services of honest people in the first place, to do the regulatory work, there is also the question of placing the responsibility for ethical conduct in the right place. This is a question about which honest men may differ; and two of them did differ very much a few days ago.

The two men were Rep. Harris and Chairman Doerfer addressing a meeting of broadcasters. Harris was talking about the recent disclosures of venality in the radio broadcasting industry. He said that the evidence has shown that the practice of greasing the palms of disc jockeys at local radio stations was so widespread as to indicate the accepted pattern of operation. (Federal Trade Commission testimony before the House investigators on Mar. 4 showed that 255 disc jockeys and other broadcasting personnel in more than 56 cities had received payments from record companies, and at least seven stations had accepted such payments.)

Harris felt that this was essentially a question of morality in which the entire phonograph-radio industry relationship had become corrupted. Furthermore, he felt that the FCC had fallen down on the job in not preventing or finding out about this.

Chairman Doerfer, later joined by Federal Trade Commission Chairman Earl Kintner, took exception to this point of view. They contended that the supervision of such a situation was primarily the responsibility of the industry itself. It was pointed out that people within these industries were in a better position than the regulators to know what was going on and how to stop it. And Chairman Kintner made the additional observation that there just is not enough manpower available to the regulatory commissions to check and monitor each and every radio and TV program, every hour of the day and night, all over the nation. Such a gigantic policeman's job would require the creation of a colossal and expensive bureacracy to saddle on the back of the federal taxpayers.

So the issue was drawn. Harris conceded that the industry has a responsibility in the first place to keep its own house in order. But what if it doesn't? Isn't there a further responsibility on the part of the regulatory authority to step in and administer disciplinary measures in such a situation? And if there is no present regulatory machinery for doing this, shouldn't one be created?

As far as the present state of the law is concerned, there is no justification for indicting the whole FCC or FTC for the "payola" scandals. One can read the text of the Federal Communications Act and the Federal Trade Act and find in them no language which says that it is the job of these regulatory commissions to crack down on itchy palms and sticky fingers among radio station employes. The commissions might well be accused of exceeding their authority if they tried. But whether such responsibility should now be created by law, and how it could be set up, as a practical matter, is one of the big questions which Congress will have to decide—perhaps after the hearings of the House subcommittee in Washington this month.

After all, Congressman Harris has his own responsibility to the people of the nation. His committee and the two subcommittees have been busy with this over-all regulatory investigation since 1957. They have disclosed scandal after scandal, mostly in the radio and TV field but with some overtones in other fields such as commercial advertisers and program producers. (FTC testimony before the House group on Mar. 4 showed that so-called "sneak commercials" are sold for $200 to $270 per "plug" and are planted on shows by TV writers, prop men, producers, entertainers, directors, cameramen and others.)

Now the public is becoming impatient. What is Congress going to do about all this? So far it has done nothing but dig more dirt. Rep. Harris feels that he and his committee members are on the spot, and that the spot will get hotter unless he can show some results by way of legislative action.

It is in such an atmosphere of pressures and counter pressures that Congress is now undertaking the important task of considering changes or "reform" for the FCC. We can only hope that no drastic or unwise law, which would cripple or nullify the effectiveness of the FCC, will be enacted.

Judged on the basis of its quarter century record, the FCC has made a magnificent contribution to public service. It has done this notwithstanding the hot water it has been continuously placed in, almost since its creation in 1934.

Two great industries, radio and TV, both rendering valuable service to the American public, have been born and nurtured to their present state under the auspices of the FCC.

There is, of course, much much more about the great work of the FCC of which the public is scarcely aware. The telephone industry knows, for example, of the part played by the FCC in the interstate regulation of the nation's modern and smooth-running telephone, telegraph and commercial radio operations. The complicated and never ending task of radio frequency allocation and monitoring, the regulatory provision of safety services and other public communications, and a lot more could be added up under the impressive record of the FCC. These things the commission has performed so well, and without fanfare, that most of us just take them for granted. Perhaps too much so.

SEC Announces New Tax Accounting Policy

The Securities & Exchange Commission last week announced a new statement of policy with respect to financial

(Continued on page 61)

THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

THE WRITER on Feb. 18 enjoyed a flight from Washington, D. C., to Kansas City, on a United Air Lines' DC-7 to attend the U. S. Army Signal Corps dedication of the Midwest Relay Station at Fort Leavenworth, Kan.

This mid-continent link in the army's world-wide communication network was dedicated by Maj. Gen. Ralph T. Nelson, the Army's Chief Signal Officer, and Maj. Gen. Lionel C. McGarr, commanding general of the Army Command & General Staff School at Ft. Leavenworth.

The Midwest Relay Station is the second and largest of three strategic communication stations scheduled to go into service in the continental United States. The first, at Camp Davis, Cal., began operation in 1956, and the third is being completed at Ft. Detrick, Md.

This new station, with a capability of handling 200,000 messages a day, provides a strategic gateway to overseas commands. The facility, which includes the operations building and the remote radio sites, was built and equipped at a cost of approximately 10 million dollars.

Completely automatic message switching, instead of the manual tape relay method, is utilized. This arrangement permits receiving, processing, and retransmitting messages through the station without human intervention.

The switching equipment for this station was engineered and manufactured by the Automatic Electric Co., Northlake, Ill. AE engineers designed the system to be highly flexible from both operational and maintenance standpoints. Units of equipment may be shifted from one line to another within the office, thus permitting maintenance without disruption of operations.

The ability of the equipment to act immediately on any message upon its arrival at the switching center is a unique feature of the system. When a message comes into the center, it is switched, without delay, to a cross-office position marked "inter-office switching equipment." This frees incoming lines to receive high precedence messages. There are six degrees of message priority.

A "break-in" device provides automatic cancellation of messages of lower precedence and permits urgent messages to gain access to outgoing lines. The message which was interrupted requires only a minor manual operation for re-transmission in its entirety.

Multiple-call messages — those that are being sent to more than one station —are handled so that the outgoing messages are sent independently of each other, and are handled according to the order of priority.

The majority of the relay and switching equipment is packaged in components with plug-in connectors which permit easy removal, replacement and maintenance. The equipment is also designed to provide suitable test points and circuit-access facilities for use in service testing.

A high degree of message security is maintained since each message is individually safeguarded on its path through the station. Special alarm circuits indicate nearly every possible abnormal function of the equipment. The alarm circuits and traffic indicators are located at a supervisory position which permits the entire switching center to be under the control of a single supervisor.

Back in 1949, the U. S. Army Signal Corps contracted with the Automatic Electric Co. to design an automatic teletypewriter switching system. By 1952, an experimental system had been developed and installed at the Fifth U. S. Army headquarters in Chicago. Since that time, other systems have been developed for the army, culminating in the advanced 150-line system now in service in the Midwest Relay Station.

The U. S. Army Signal Corps also contracted with the Kleinschmidt Division of Smith-Corona Marchant, Inc.,

(Continued on page 47)

Left is Maj. Gen. Ralph T. Nelson, the Army's Chief Signal officer, and right is Maj. Gen. Lionel C. McGarr, commanding general of the Army Command & General Staff School at Ft. Leavenworth.

Transistors in Telephony

By ARTHUR L. ALBERT*

Part 5—Transistor Amplifiers

TRANSISTOR amplifiers were considered in the preceding article of this series (TELEPHONY, March 5). In this article the discussion of amplifiers will be continued, and the series will be concluded.

As previously mentioned, deriving amplifier equations involves considerable effort and the details will be omitted. The amplifier circuit of Fig. 12 and the transistor h-parameter values of the preceding article will be used again.

Insertion Power Gain

Amplifiers are used for many purposes. In telephony an important use, if not the major use, is to increase the power level in a transmission circuit. The repeaters installed at various points in open-wire lines and cables are to amplify, and thus increase, the signal power to offset the transmission losses in the preceding length of circuit.

The equations and calculations of the preceding section are useful, but do not give the information often desired. For example, just what is the power amplification, all factors being considered, when an amplifier is inserted in a transmission circuit?

Insertion power gain gives the power increase in decibels that results when an amplifier is inserted in a circuit. The power gain in decibels is 10 times the common logarithm of the ratio of the power delivered to a load *after* the amplifier is inserted, to the power delivered before the amplifier is inserted.

Insertion power loss may be expressed for a device that does not amplify. In this instance, the insertion loss would be found from the ratio of the power delivered to a load before the device is inserted to the power delivered to the load after insertion. Insertion gain and loss are of particular importance because actual circuit conditions are considered, including the effects of impedance mismatches.

The equation for calculating transistor insertion power gain in decibels is

$$\text{Insertion Power Gain} = 10 \log_{10} \times \left(\frac{h_f (R_g + R_L)}{h_i + R_g - h_f h_r R_L + h_o R_L (h_i + R_g)} \right)^2$$

For Fig. 12, this calculates to be 47.2 decibels.

Thus, assume that the amplifier of Fig. 12 is connected into the line of *Fig. 13*, and that lossless impedance-matching transformers are used. If the turns ratios are such that the *transformed* $R_g = 435$ ohms, and $R_L = 8{,}000$ ohms, then the signal power flowing in the line section to the right is 47.2 decibels greater than before the transistor amplifier was inserted. For other values R_g and R_L, the insertion power gain would be different.

The calculations just made, and those of the preceding article have stressed

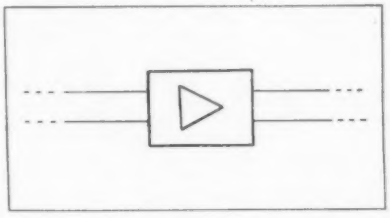


Fig. 13.

that the signals must be small to prevent overload and distortion. The question is, how small must the signals be? This can be determined from characteristic curves, and checked with an oscilloscope or with a wave analyzer. Characteristic curves often are not available. But, even should they be available, it is recommended that an experimental amplifier be connected and studied before final operating values are selected.

Power Output

The transistor previously considered is of the low-level, small-signal, type. Power-output transistors are available. However, the method of making power-output calculations can be illustrated just as well using this same small-signal transistor as an example. For this purpose the curves of Fig. 11 have been redrawn in *Fig. 14*.

As operated in the preceding article, the transistor collector-supply voltage was 22.5 volts, and the collector direct current was about 1.7 milliamperes. This current flowing through the 8000-ohm load resistor caused a voltage drop of $0.0017 \times 8000 = 13.6$ volts, leaving a dc voltage of $22.5 - 1.36 = 8.9$ volts between the collector and the grounded emitter.

In the preceding article the output signal voltage was found to be 1.98 volts. Multiplying this r.m.s. value by 1.414 gives a positive peak value of 2.8 volts, and this, added to 7.3 volts gives 10.1 volts. This is the largest voltage

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that will exist between the collector and emitter (for sinusoidal operation), and is about the maximum value that can be used without damaging this transistor.

In making a power-amplifying stage, a knowledge usually is desired of the maximum practicable power output possible with tolerable distortion. After examining the curves of Fig. 11, replotted as *Fig. 14*, it was decided to use a readily-available 9-volt battery for E_{cc}, and to use a load resistance of 1680 ohms.

Also, it was decided that the dc base "bias" current should be 100 microamperes. (This is a value different from the 60 microamperes used in obtaining the h parameters of previous calculations. However, h parameters are not needed for the graphical solution now to be made.)

The 1680-ohm load line shown on Fig. 14 was plotted between the points 9 volts, and 9/1680 = 5.36 milliamperes. An examination of the curves indicated that the distortion would not be excessive if the base signal-current, i_b, varied between a maximum value of 200 microamperes, and a minimum value of 0 microampere.

For this base signal swing, the collector current, as shown in Fig. 14, will vary between 5 and 0 milliamperes, giving an r.m.s. value of (5/2) × 0.707 = 1.77 milliamperes.

The collector voltage will vary between 9 volts and 0.7 volt, giving an r.m.s. value of (9/2) × 0.707 = 3.18 volts. Thus, when operated as specified, the signal-power output will be 0.00177 × 3.18 = 0.00563 watt, or about 5.6 milliwatts.

Collector Power Efficiency

From Fig. 14, the direct current flowing in the collector circuit is about 2.6 milliamperes, and the direct voltage is about 4.8 volts. Thus, the battery power input to the collector circuit is 0.0026 × 4.8 = 0.01248 watt, and the collector efficiency is (0.00563/0.01248) × 100 = 45 per cent, approximately.

If desired, other values of load resistance may be considered, corresponding load lines may be plotted, and calculations of power output and efficiency made. Then, by comparison, the desired final operating conditions can be determined.

The preceding calculations are made in the same general manner as for vacuum tubes. However, it is probable that with transistors the agreement between power calculations made using static curves, and measured values, will not be as close as would be expected with vacuum tubes. An important reason is that with transistors the characteristic curves vary considerably as the transistor warms during operation.

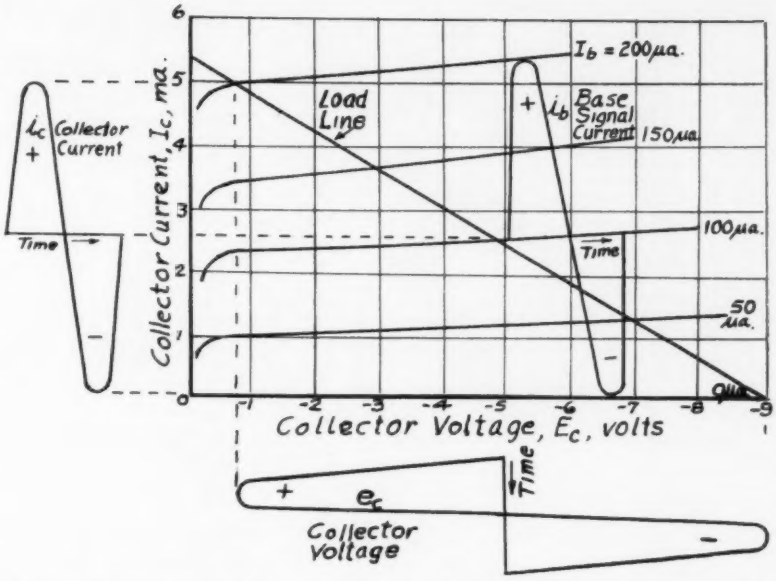


Fig. 14. Static characteristic curves for calculating the power output of a transistor amplifier. The collector current with zero base current was so small that it has been assumed zero.

With vacuum tubes the percentage distortion to be expected for different conditions of operation can be reliably calculated from the characteristic curves. Such calculations can be made for transistors. However, these calculations have been found to be less reliable with transistors, again because of temperature variations.

Power Input

If the reasonable assumption is made that Fig. 10 of the preceding article applies when the transistor is operated as just considered, an approximation can be made of the base-input power requirements. As will be recalled, the transistor is being operated with the emitter grounded, and with the base as the control electrode.

In the previous calculations the base bias current is 100 microamperes, and from Fig. 10, the corresponding direct voltage required is 0.18 volt. The dc power input is, 0.0001 × 0.18 = 0.000018 watt.

It was assumed, in drawing Fig. 14, that the base current varied between 200 microamperes, and zero microamperes in a sinusoidal manner. But, Fig. 10 shows that if the base driving signal current is sinusoidal, the input voltage definitely will not be sinusoidal.

For these reasons, simple calculations of base signal-power input are not possible. However, it is assumed that as the base signal current varies sinusoidally, the base voltage also varies sinusoidally between 0 and 0.21 volt, then, a rough idea of the base ac signal-power input can be calculated.

The r.m.s. signal input current is (0.0002/2) × 0.707 = 0.0000707 ampere. The assumed r.m.s. base voltage is (0.21/2) × 0.707 = 0.0742 volt. Then, with the assumptions made, the ac signal power input is 0.0000707 × 0.0742 = 0.00000525 watt, or 5.2 microwatts.

From the preceding paragraph it is reasonable to assume the signal-power input is only about (0.00000525/0.00563) × 100 = 0.09 or less than 0.1 per cent of the signal power output of 0.00563 watt.

In other words, for a small transistor operated in class A, as it normally would be operated for amplifying telephone speech signals, the signal driving power requirements are negligible in comparison to the amplified output signal power.

All of the calculations made in these articles have been checked experimentally, and good agreement was found.

This completes the series of five articles on "Transistors in Telephony." In a sense, this inclusive title is not justified, because the "surface" has inadequately "been scratched." It is no exaggeration to state that a transistor circuit counterpart exists for almost all, if not all, vacuum-tube circuits. It is hoped that the reader will find that the door to the storehouse of information on semiconductor devices has been opened, if but slightly. The reader will find much information of interest in publications such as the General Electric Co.'s "Transistor Manual," obtainable at radio-supply stores.

Independent Adopts Machine Accounting

Washington company with 8,000 subscribers finds machines facilitate post-card billing plus eight other operations.

*By Albert Skinnell**

LONG BEFORE automatic machine accounting equipment was commonplace in telephone accounting departments, our company, the Skagit Valley Telephone Co., Mount Vernon, Wash., leased and placed IBM (International Business Machine Corp.) equipment in service which has worked very well and "proved-in" even though the company is relatively small.

Our company was serving 4,400 subscribers, both local and toll, in 1948 and was gaining subscribers and toll volume each month. Conventional manual billing methods employed at this time were cumbersome, and were frequently out of balance. Bills often were late getting to subscribers. Collections were not good. A change was in order.

A study of a number of billing and accounting systems was made. Although IBM punch card was more costly, the system was flexible and performed every accounting and record function required. At the time, the company was unable to secure information from other telephone companies to learn of their experience as to procedures and costs. However, IBM equipment appeared to be the most practical, considering and anticipating subscriber billing and record problems.

A canvass was made of other businesses experiencing billing or record problems similar to ours. Two firms, a Breeders Association and Medical In-

*Mr. Skinnell is Revenue Accountant for the Skagit Valley Telephone Co.

Left Photo: Lorraine Hull, machine operator, sorting cards for billing. Right Photo: The author, revenue accountant for the Skagit Valley Telephone Co., Mount Vernon, Wash., running bills.

Charlotte Tompson, key punch operator, punching long distance toll.

surance Bureau did have similar problems. After learning of our plans they agreed to contract their work to us and thereby full utilization of the machines and operators was made and the cost to each resulted in savings. As the business grew, each of the firms contracted for similar machines for their sole use, and were fortunate to know first-hand the service and potential.

First, we planned for subscriber billing only and installed a tabulator, sorter and key punch. The first year we operated on a trial-and-error basis changing our bill forms to better meet our needs. IBM service engineers were helpful in developing procedures, etc., ours being the first installation in the area, of their equipment, for telephone accounting.

We soon added a summary punch, and an additional key punch and sorter.

Too, we changed our bill forms to postal card billing. In designing the card we found that we could bill the monthly rental, other charges and itemize 23 toll charges which covered about 80 per cent of our customers. Those having more than the 23 toll charges were sorted out and billed on a toll statement.

The savings in postage, stuffing, envelopes, etc., was substantial. Then, too, we found that our subscribers preferred the post card type of billing.

We have approximately 8,000 accounts billed monthly, and an average of 65,000 toll charges which are processed by two and one-half employes. The cards are printed with a postal permit so that after they are torn apart they are ready for mailing.

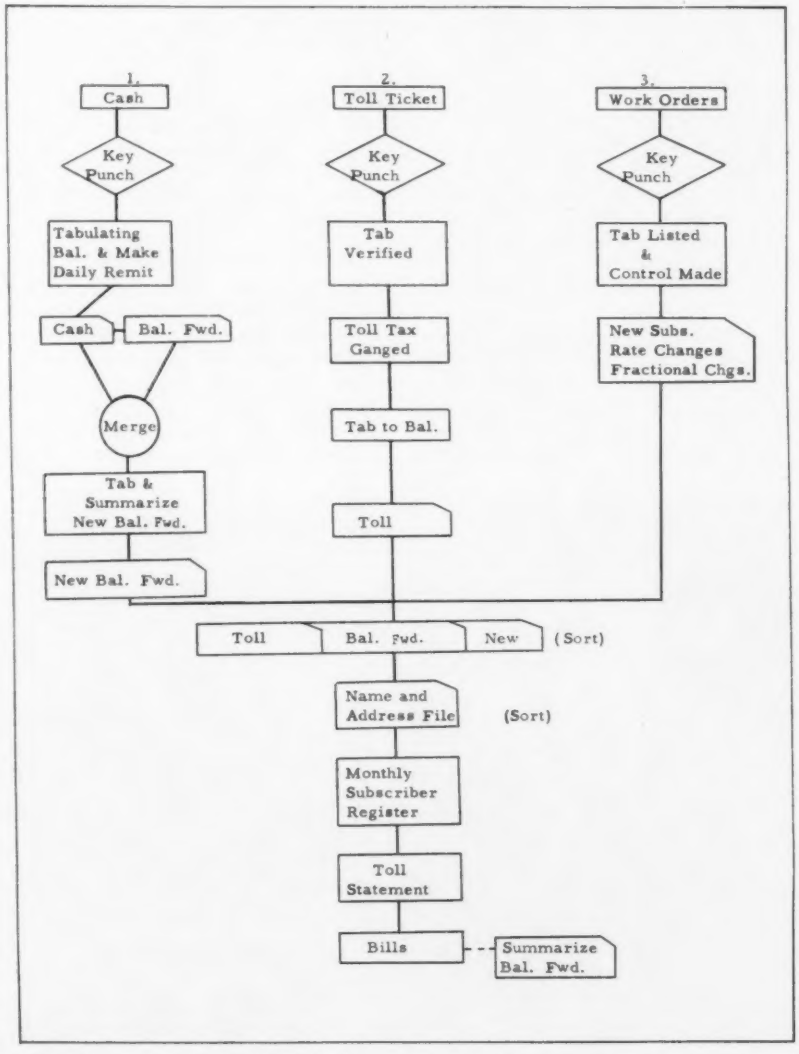
The sequence of billing is noted on the attached Monthly Statement Flow Chart. A definite advantage to this system is that accurate controls are made possible. Balancing of the subscriber's account is done before and after billing. The register furnished the commercial employes shows each subscriber's account in detail.

At the present time our machine accounting work, aside from billing, includes:

(a) Payroll.
(b) Connecting line reports.
(c) Vehicle expenses.
(d) Local traffic unit surveys.
(e) Station records.
(f) Cash listings and deposits.
(g) Stock records.
(h) Line and wire chiefs' records.

The Skagit Valley company is proud of its machine accounting operations, but continues to make studies to eliminate key punching and improve. The author will be most happy to answer questions on the machine accounting operations. He may be reached by writing: Skagit Valley Telephone Co., Second & Washington Sts., Mount Vernon, Wash.

Lorraine Hull shown ganging federal tax in tolls.



Flow chart of Skagit Valley Telephone Co.'s machine accounting preparation of subscribers' monthly statements.

60's for Selling

Minnesota convention told

by R. C. RENO

THE NEXT 10 years should be dubbed the "Sizzling Selling Sixties" as far as the telephone industry is concerned, delegates to the convention of the Minnesota Telephone Association were told by the association's president, Carl M. Ostby. The convention was held Feb. 8, 9 and 10 in St. Paul.

Mr. Ostby, general manager of Garden Valley Telephone Co. of Erskine, Minn., recommended that every telephone company "should really get hot" on a selling campaign. "Selling service is our business," he said, "and every time we add somebody's neighbor to our system, we are providing more service from the telephones already in service. It means more service to our subscribers and more profit for us."

Can't Sit Back and Relax

Mr. Ostby referred to his own company as an example of what can be done when a company concentrates on a marketing and sales program.

He said after his company had spent 3 million dollars of new capital to convert its 21 exchanges to dial, the management felt "pretty smug and self-satisfied" that its job had been well done and thought "we could sit back and put our feet on our desk and relax."

However, early in 1959, a check of rural electric users in the company's area, showed many of these users did not have telephone service. Immediately, Mr. Ostby inaugurated a direct-mail sales campaign to rural non-subscribers. Through this campaign, 400 rural telephones were added.

Also, Mr. Ostby said, prior to Christmas, the company conducted a direct-mail campaign on extensions and colored telephones. This resulted in the sale of 200 colored telephones, many of which were extensions.

Campaigns Pay Off

"Concentrated and continuous marketing and selling programs certainly pay off and every telephone company should put one into effect. Let's make the next 10 years the 'Sizzling Selling Sixties,' in the telephone industry," Mr. Ostby said.

In closing his address, Mr. Ostby commended telephone people for their unselfish devotion in serving the public. He said:

"When thinking of people who have served mankind in a big way such names as the Doctors Mayo, Thomas Edison, Abraham Lincoln and many others who have made the headlines as servants of humanity usually come to our minds. There are thousands of people who never make the headlines, but who, nevertheless, are doing a big job in a quiet way in the service of humanity.

"In your work in the telephone industry, you are doing just such a job.

Two University of Minnesota students from Seoul, Korea, were Minnesota convention guests of Charles M. Cashel, of the Worthington (Minn.) Telephone Co. Their names (Americanized) are Eddie Ham (left) and Namcho Park (right).

You have placed the telephone in the hands of millions of people. You extend to these millions this means of easy communication. You save them literally millions of miles of travel. You provide them with protection against fire, sickness, death and disaster. You have lifted the load of worry concerning their loved ones.

"You may not get rich as the owner or operator of a telephone system, but with a top-notch association to go to bat for you, there is no reason why you can't make a good living, and whether you accrue wealth or not, and even though you may not make the headlines, there is no one going to take away from you the deep satisfaction that comes from serving well your fellowman."

47 Exchanges Converted

Dial telephone service was installed in an additional 47 Minnesota communities during 1959, it was reported by Keith W. Vogt, secretary of the Minnesota association. Of the new dial exchanges, two are operated by Northwestern Bell Telephone Co. and 45 by Independent companies.

Total telephones now in service in Minnesota are 1,299,783, of which 1,041,683 are served by Bell and the remaining 258,100 by 218 Independents. Of the total telephones in service, Bell has 95.6 per cent converted to dial, while Independent companies have 74.5 per cent converted.

The role of the Rural Electrification Administration's telephone loan program in helping telephone companies finance rehabilitation and expansion of their systems, was cited by Douglas Gleason of Ottawa, Kan., secretary of the Kansas Telephone Association. Mr. Gleason also is executive director of the National REA Borrower's Committee.

This interested foursome during a general Minnesota convention session includes, from left, Mr. and Mrs. Allen Bremseth, and Mrs. and Mr. Robert C. Bunke, all of the Ace Telephone Co., Houston, Minn.

He said the improvement of rural telephone service, which REA has helped finance, has "created entirely new respect for the entire telephone industry."

"When service offered by small rural companies was an object of ridicule," Mr. Gleason said, "it reflected on the entire industry. Now this situation is being corrected throughout the nation, and every telephone man benefits."

Takes Issue With Critics

Mr. Gleason cited the sources of financing for Independent companies that became available several years ago, but he said many small companies could not justify loans from these sources. REA, through its telephone loan program, established 10 years ago, came to the aid of these smaller units, he said.

He took issue with critics of the REA program who feel it represents a new and radical philosophy of government, and that it is socialistic and government subsidization.

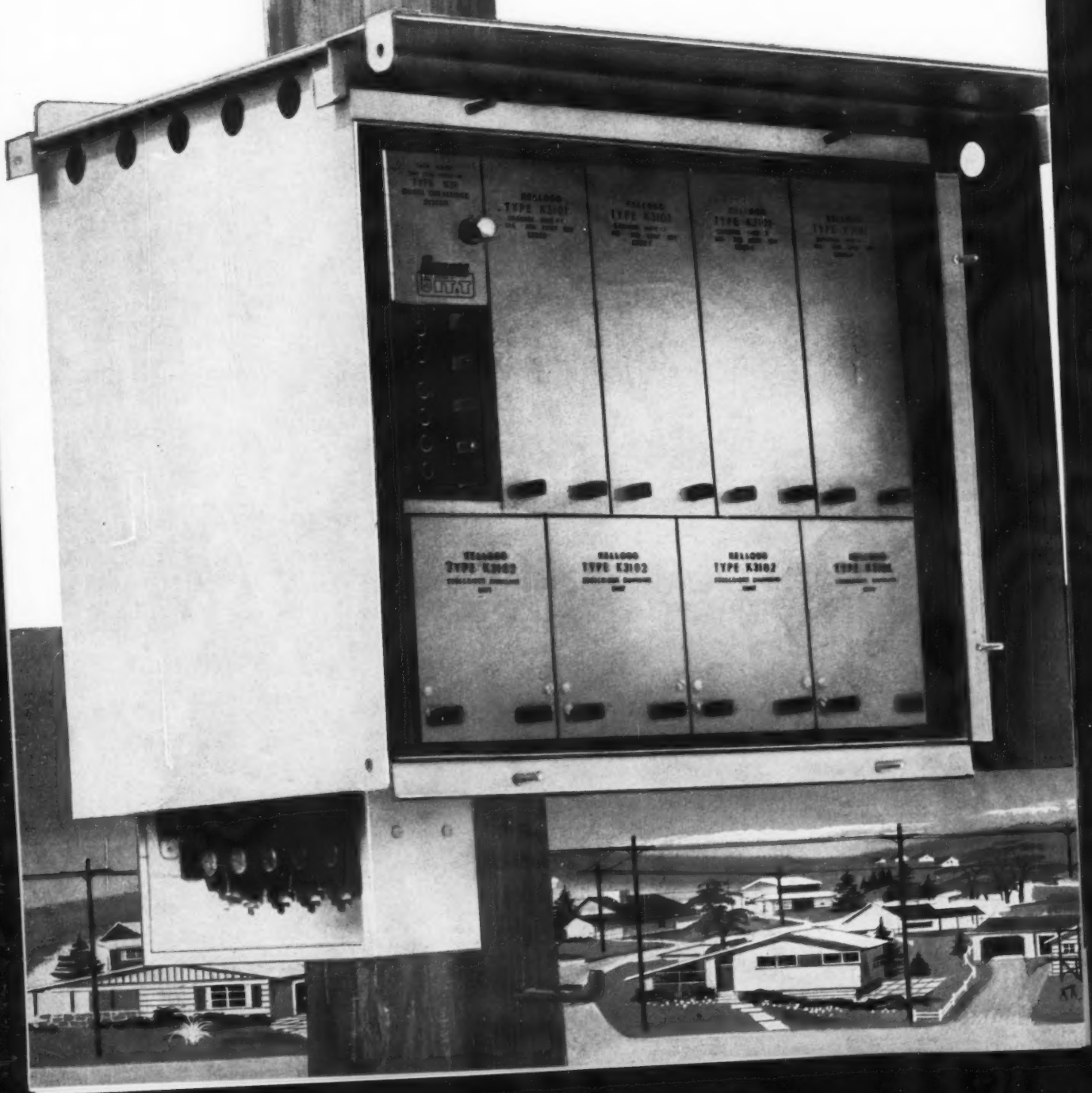
Mr. Gleason held that the REA telephone loan activity did not represent a socialistic or temporary government subsidization philosophy; but it was, instead, born out of necessity—to make it possible for people in rural communities to have modern and dependable communication service.

Mr. Gleason said after 10 years of operation, it is time for the industry to

(Continued on page 30)

Officers and directors of the Minnesota Telephone Association, Inc. Seated, left to right: Carl Ostby of Erskine, president; Kenneth Ellefson of Ada, vice-president; Keith W. Vogt of St. Paul, secretary-treasurer, and A. G. Stradtman of St. James. Standing, left to right: W. L. Stocks Jr. of Minneapolis; Herbert Lien of Blackduck; P. M. Ferguson Jr. of Mankato; A. E. Lindekugel of Fairmont; Charles Cashel of Worthington; Harold Bollinger of Waconia; Vies Martinsen of Grand Meadow; Kenneth M. Peterson of Kerkhoven; John G. Holland of New Ulm; Dell Ludenia of Osakis, and Eldon Eckles of Blue Earth. Missing is Harold L. Ericson of Hector, who also is a director.

Low cost answer to pop



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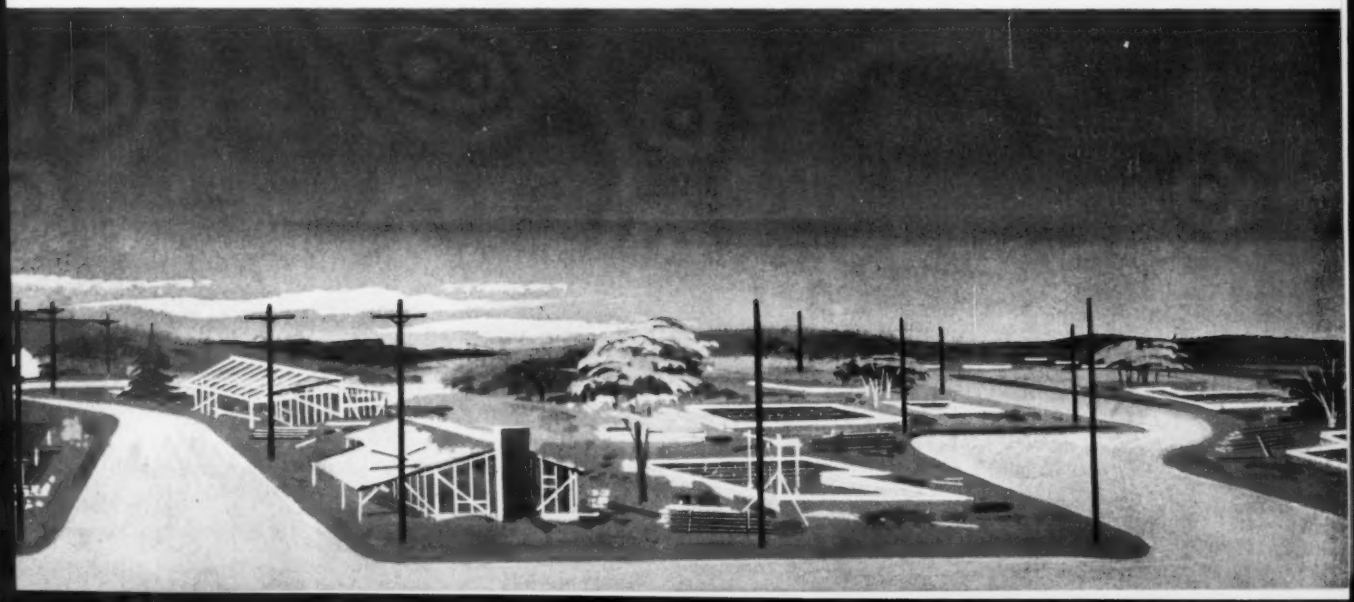

acknowledge the record and progress of the REA loan program.

Mark-Sense Explained

Mark-sense toll ticketing was the subject of two convention addresses. D. R. Ronning, of Northwestern Bell Telephone Co., explained the mark-sense technique and the reasons for adopting it. T. P. Hultkrans of Hartfil, Inc., telephone accounting firm, explained the advantages of mark-sense tickets to telephone companies in toll accounting and in preparing customers' long distance statements.

The ever-increasing role of the telephone industry in the development of national defense facilities was vividly portrayed by Paul F. Stephenson, executive assistant of Northwestern Bell Telephone Co. Mr. Stephenson discussed space age developments in an illustrated talk titled, "Rendezvous With the Stratosphere."

He said complex computers, such as used in missile guidance systems, are the natural outgrowth of years of research conducted by telephone scientists in development of today's nationwide dial system—which may, in itself, be considered the world's largest computer.

The "command-guidance" principle—used in Titan, Atlas and Nike—has the missiles controlled by a computer on the ground. The computer receives continuous information from a radar tracking a missile, calculates its flight pattern, and relays commands to the missile to keep it on its proper course. To illustrate, Mr. Stephenson showed a simulated demonstration of a guided missile flight from launching until the missile hit the target.

Independents' Growth

The rate of growth of Independent telephone companies is now exceeding that of Bell companies, the convention was told by Foster B. McHenry of Jefferson City, Mo., president of United States Independent Telephone Association.

"Today Independent telephone companies serve nearly 11 million telephones in 10,766 cities and towns, have a total plant investment of more than 3.5 billion dollars, employ 100,000 people, and have 250,000 stockholders," Mr. McHenry said.

"This represents significant growth, but I believe the brightest era and largest opportunities lie ahead. There seems to be no let-up in the demand for telephone service. Operating in many suburban areas adjacent to large centers of population, Independent companies have been, and will continue to be, beneficiaries of shifts in population away from the big cities. This is a trend that seems certain to continue," he stated.

One of the key speakers at the Minnesota convention was Foster B. McHenry of Jefferson City, Mo., president of the United States Independent Telephone Association. Others at the speaker's table are, from left, Carl Ostby, MTA president, and Keith W. Vogt, MTA secretary-treasurer.

Some of the problems facing Independent companies, Mr. McHenry said, include the need for recruiting more young people; the need for more technical trainees; higher trainee standards for executive, management and supervisory personnel; and more investors to provide expansion funds.

Higher Rates Needed

"We must also have higher rates and earnings than presently allowed by regulatory commissions," Mr. McHenry concluded. "It might even be possible that the public will insist that public service commissions be more realistic in our rate regulations so we will be able to furnish high-grade competitive communication service."

"Current Value as a Factor in Rate-Making" was the subject of an address by Paul A. Rasmussen, chairman of the Minnesota Railroad & Warehouse Commission.

Paul Rasmussen, chairman of the Minnesota Railroad & Warehouse Commission, who was one of the top speakers at the Minnesota convention.

Chairman Rasmussen explained that when the 1957 legislature amended the law pertaining to telephone regulation, it required that the commission *shall* give due consideration to current value in establishing a rate base. . . . However, the details of carrying out this provision of the law were left to the judgment of the commission.

In all telephone rate cases since the passage of this law, the commission has complied with this statute . . ., the chairman said.

In the last rate hearing for Northwestern Bell Telephone Co. in 1958, Mr. Rasmussen said the commission showed the original book cost depreciated amounted to $175,309,609. The current value as determined by experts employed by the commission, after depreciation, amounted to $222,627,170.

Many Factors Involved

"In arriving at a rate base, the commission took a weighted average of 50 per cent of the current value and 50 per cent of the depreciated book cost. There were other additions, such as materials and supplies, working cash, and allowances for property that was in the process of being constructed, bringing the commission's fair value rate base to 216 million dollars. *The commission considered this to be a fair present value based on conditions shown at the time of the proceeding,*" the chairman reported. He continued:

"There are so many technical factors involved in determining a rate base, it would be wrong for the industry to come to the conclusion that, because the commission used this method, particularly the 50 per cent weighted average,

(Continued on page 50)

The Potential Market for

Telephone Answering Devices in the Service Industries

By ALEXANDER I. WARRINGTON*

THIS IS the second installment of Mr. Warrington's article presenting statistics on the so-called service industries, by regions and states, which constitute a big potential market for telephone answering devices. These statistics given in this series should be of value to market analysts in telephone companies and those in charge of marketing telephone services.

The first installment was published in the Mar. 5 issue, in which market data were presented for REGION 1. New England—Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut.

REGION II. Middle Atlantic Region—New York, New Jersey and Pennsylvania.

(See "Impact of Telephone Communication on the Economies of the Various Geographic Regions of the U. S."—TELEPHONY, July 25, 1959.)

New York

This state accounts for 53.7 per cent of all service units in the Middle Atlantic region. Of the 368,800 service units in the state 186,000 are without payrolls and 182,800 had payrolls.

The five metropolitan areas shown in *Table 2* (see below) absorb 13.2 per cent of all the service units in the state.

The potential for telephone answering devices is as follows: Primary market, 167,400; secondary market, 43,800, and tertiary market 51,200. The total of 262,400 represents 3.3 per cent of total telephones.

New Jersey

The 109,200 service units account for 15.9 per cent of the regional total. Service units in the amount of 57,200 are without payrolls and 52,000 had payrolls.

The potential for answering devices is as follows: Primary market, 51,500;

Mr. Warrington is an Industrial Economist of Baton Rouge, La., and has authored many articles for TELEPHONY during the past several years.

TABLE 1

Total Number of Service Units, Middle Atlantic Region, 1960

Geographic Region and State	Total Number of Service Units			Percentage Distribution
	Without Payrolls	With Payrolls	Total	
Middle Atlantic	366,800	318,800	685,600	100.0
New York	186,000	182,800	368,800	53.7
New Jersey	57,200	52,000	109,200	15.9
Pennsylvania	123,600	84,000	207,600	30.4

This is the most basic table of the entire series. It is based upon the "1954 U. S. Census of Selected Service Industries," which was adjusted for 1960.

"Service units without payrolls" (first column) are, for the most part, individuals who operate some kind of service establishment as a regular business and without paid help.

"With payrolls" signifies service units that maintain paid employes.

secondary market, 12,500; tertiary market 14,600. The total of 78,600 represents 3 per cent of total telephones.

Pennsylvania

The 207,600 service units are composed of 123,600 without payrolls and 84,000 with payrolls. The state's total reflects 30.4 per cent of the region.

The 13 metropolitan areas shown in *Table 2* represent 24.0 per cent of the total for the state.

The potential for answering instruments is as follows: Primary market, 111,200; secondary market, 20,200; tertiary market 23,500. The total of 154,900 reflects 3.4 per cent of total telephones.

(Tables 4 and 5 are on page 37)

TABLE 2

Total Number of Service Units, Middle Atlantic Metropolitan Areas, 1960

State and Metropolitan Area	Total Number of Service Units			Percent of State Total
	Without Payrolls	With Payrolls	Total	
New York	186,000	318,800	368,800	100.0
Buffalo	10,800	9,200	20,000	5.4
Albany-Schenectady-Troy	6,400	4,800	11,200	3.0
Rochester	4,000	5,200	9,200	2.4
Utica-Rome	3,600	2,400	6,000	1.6
Binghamton	1,600	1,600	3,200	0.8
New Jersey	57,200	318,800	109,200	100.0
Northeastern New York	162,000	168,000	330,000	*
Atlantic City	2,800	3,200	6,000	5.4
Trenton	3,200	2,400	5,600	5.1
Pennsylvania	123,600	84,000	207,600	100.0
Philadelphia	45,200	34,000	79,200	38.1
Pittsburgh	24,400	17,600	42,000	20.2
Allentown-Bethlehem-Easton	5,600	3,600	9,200	4.4
Wilkes Barre-Hazelton	3,600	3,200	6,800	3.2
Syracuse	4,000	2,800	6,800	3.2
Harrisburg	3,200	2,800	6,000	2.8
Reading	3,200	2,400	5,600	2.6
Scranton	3,600	1,600	5,200	2.5
Erie	2,800	2,000	4,800	2.3
Lancaster	2,800	2,000	4,800	2.3
York	2,800	1,600	4,400	2.1
Johnstown	2,800	1,600	4,400	2.1
Altoona	1,200	800	2,000	0.9

*Two states involved and therefore not shown.

Information is of the same type as in *Table 1*, except data are for metropolitan areas.

TABLE 3

Market Potential for Answering Instruments, For Middle Atlantic Region, by Degree of Intensity, 1960

Geographic Region II and State	Number of Service Units			Total Number of Service Units
	Primary Market	Secondary Market	Tertiary Market	
Middle Atlantic	366,800	95,600	223,200	685,600
New York	186,000	54,800	128,000	368,800
New Jersey	57,200	15,600	36,400	109,200
Pennsylvania	123,600	25,200	58,800	207,600

The *primary* market is the market which will require the least effort and the units shown therein are close to the total of the number of answering devices needed. The need is urgent because the operator or the service unit has no tangible human assistance.

The *secondary* market represents service establishments that have one and only one paid assistant. This is also a rich potential market for telephone answering devices. Approximately 80 per cent of service units with one paid employe need answering instruments.

The tertiary market represents the balance of service units and has a potentiality for telephone answering devices of from 30 to 50 per cent of the units shown.

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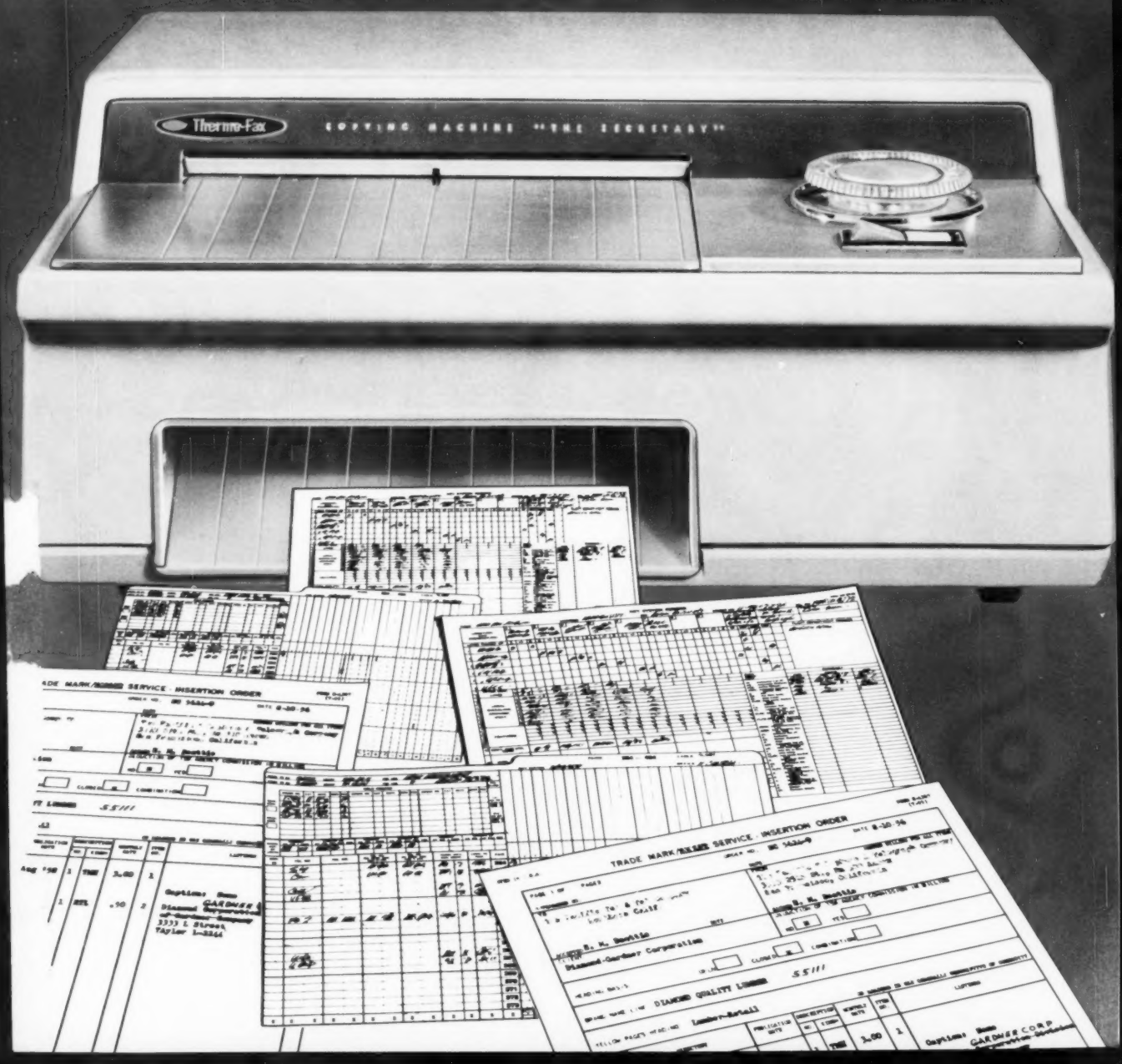

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TABLE 4

The Market Potential for Answering Devices, for Middle Atlantic Metropolitan Areas, 1960

State and Metropolitan Area	Number of Service Units			Total Number of Service Units
	Primary Market	Secondary Market	Tertiary Market	
New York	186,000	54,800	128,000	368,800
Buffalo	10,800	2,800	6,400	20,000
Albany-Schenectady-Troy	6,400	1,400	3,400	11,200
Rochester	4,000	1,600	3,600	9,200
Utica-Rome	3,600	700	1,700	6,000
Binghamton	1,600	500	1,100	3,200
New Jersey	57,200	15,600	36,400	109,200
Northeastern-New York	162,000	50,400	*	*
Atlantic City	2,800	1,000	2,200	6,000
Trenton	3,200	700	1,700	5,600
Pennsylvania	123,600	25,200	58,800	207,600
Philadelphia	45,200	10,200	23,800	79,200
Pittsburgh	24,400	5,300	12,300	42,000
Allentown-Bethlehem-Easton	5,600	1,100	2,500	9,200
Wilkes Barre-Hazelton	3,600	1,000	2,200	6,800
Syracuse	4,000	800	2,000	6,800
Harrisburg	3,200	800	2,000	6,000
Reading	3,200	700	1,700	5,600
Scranton	3,600	500	1,100	5,200
Erie	2,800	600	1,400	4,800
Lancaster	2,800	600	1,400	4,800
York	2,800	500	1,100	4,400
Johnstown	2,800	500	1,100	4,400
Altoona	1,200	200	600	2,000

*Computation was not made because more than one state is involved.

This table is identical with *Table 3*, except it is for metropolitan areas.

TABLE 5

Percentage of Total Telephones Absorbed by Service Units, in the Primary, Secondary, Tertiary Markets for Answering Devices

Geographic Region II, and State	Total Number of Telephones	Percentage of Total Telephones Absorbed by Service Units			Total Number of Telephones
		Primary Market	Secondary Market	Tertiary Market	
Middle Atlantic	14,990,200	2.4	0.6	1.4	100.0
New York	7,896,900	2.3	0.6	1.6	100.0
New Jersey	2,560,100	2.2	0.6	1.4	100.0
Pennsylvania	4,533,200	2.7	0.5	1.3	100.0

This table should be useful to market analysts in making more detailed analyses and also in adjusting *Tables 1* through *4* annually. The adjustment of *Tables 1* through *4* can be made by using total telephones as a base. With the elasticity that is provided by *Table 5*, *Tables 1* through *4* should prove of service for at least five years.

Utility Says '59 Operating Revenues 14 Per Cent Higher

Judson Large, president, reports from Chicago that both revenues and earnings of the Central Electric & Gas Co. and its telephone subsidiaries, consolidated, established new all-time highs in the year 1959. Likewise, each of the companies in the group had higher revenues and earnings than ever before.

Consolidated operating revenues were $47,129,000 for 1959, as compared with $41,339,000 for 1958, an increase of 14 per cent. Net operating income for 1959 was $7,220,000, an increase of 23 per cent.

The balance of earnings for common stock of Central Electric & Gas Co. represented $1.83 per share on 1,503,250 shares outstanding at the end of 1959, compared with $1.41 per share for 1958 when there were 47,545 less shares outstanding. This was a 30 per cent increase in per share earnings.

The 402,000 customers at the end of 1959, representing an overall increase of 5.7 per cent for the year, included 300,000 in the telephone division, with the balance gas and electric.

Telephone revenues for 1959 totalled $26,612,000, with $20,517,000 from gas and electric.

Courts and Commissions

Md. PSC Rules It Cannot Order Refund of OK'd Rates

A ruling handed down by the Maryland Public Service Commission held that the PSC had no authority to order two public utilities to refund to subscribers more than 8.2 million dollars in alleged excess revenues.

The commission in separate opinions dismissed pleas of the peoples counsel for refunds of about 6 million dollars by the Chesapeake & Potomac Telephone Co. and about $2,223,000 by the Baltimore Gas & Electric Co.

The commission at the same time scheduled a hearing for Mar. 23 to determine whether the C&P company's present rates are just and reasonable.

Former Peoples Counsel Wilfred T. McQuaid charged last year that the utilities earned more than 8 million dollars between them in excess of the rates of return authorized by the commission. Mr. McQuaid demanded that the companies be ordered to refund the excess to subscribers.

The commission held, in both opinions, that it does not have authority to direct refunds of money collected under approved rates and charges.

Refunds may be ordered, it said, only in instances where companies have filed a new rate which has been suspended before a final order is issued, and when temporary rates are involved. Neither of these factors, the commission said, applies in the telephone and gas company cases, in which the alleged excess revenues followed establishment of fixed rates of return by the commission. Mr. McQuaid filed his petition in the C&P company case last April. He maintained that the C&P company earned a return of 7.32 per cent from Mar. 1, 1958, through Feb. 28, 1959, although the commission had set its rate at 6.25 per cent of its investment.

The former peoples counsel in effect contended that the fixed rates for both utilities were illegal, since they were yielding returns well in excess of the authorized rate.

Following the commission's action, a bill to require utilities to refund so-called excessive earnings was introduced in the Maryland legislature by Delegate Francis X. Gallagher of Baltimore.

Under the measure, the commission could order utilities to either make refunds or lower rates temporarily when their earnings exceeded authorized rates.

The lower branch of the Maryland legislature last year approved a bill "almost identical" with his current measure, Mr. Gallagher recalled. It was rejected in the state senate.

SW Bell to Keep Same Rates, Arkansas PSC Rules

The Arkansas Public Service Commission has announced that the rates of Southwestern Bell Telephone Co. will remain the same without cuts or increases (TELEPHONY, June 13, 1959).

The commission had initiated an investigation in April 1959 into the company's rates, saying that it appeared to have earned 3 million dollars more than the legal rate of return in 1958, and demanding that the company produce evidence to show that its rates should not be cut by that amount.

By coincidence, the company on the same day, Apr. 22, had requested an increase in long distance rates and miscellaneous charges.

It had asked to effect an increase in the differential for person-to-person over station-to-station long distance calls by computing overtime charges on long distance to the nearest penny instead of the next lowest 5 cent multiple. The miscellaneous charges involved were those for connections, moves and changes.

During the show-cause hearings, Southwestern Bell brought out the following points, justifying its rate of return:

(1) Five wage increases have been given to employes since 1953, the last year it got an increase in rates.

(2) Investment by the company per telephone has gone up 31 per cent since 1953.

(3) The cost of servicing the company pension fund has risen.

(4) During the test year of 1958 and afterward, the company must increase its toll payments to Independent companies under its toll contracts.

(5) Plans call for the spending of 75 million dollars to 80 million dollars in Arkansas during the next five years.

(6) A "phenomenal increase" in the cost of borrowing money has taken place.

Ask Merger of 2 Companies Into United of Indiana

Officials of Jasper Telephone Corp., Urbana Telephone Co., Inc., and United Telephone Co. of Indiana, Inc., have announced the institution of action to effect a merger of the three operating telephone companies—the Jasper and Urbana companies to be merged into United Telephone Co. of Indiana, Inc.

The Jasper corporation operates the Rensselaer, Remington and Wheatfield exchanges, serving about 2,400 stations, and the Urbana company operates the Urbana exchange, serving approximately 325 telephones.

It was stated that a petition had been filed during the week of Feb. 29 with the Indiana Public Service Commission asking approval of the merger and, further, to authorize the United Telephone Co. to apply its uniform exchange classification rates for dial service upon the completion of conversion of the Rensselaer, Remington, Wheatfield and Urbana exchanges to dial operation. Until dial service is established, present rates at these exchanges shall remain effective.

According to company spokesmen, the Remington exchange is scheduled for conversion to dial service in July of this year, while conversion of the Rensselaer and Wheatfield exchanges is planned for July 1961.

The Urbana exchange is slated for dial conversion within the next 18 months. Major outside plant and facilities expansion and improvement projects are being scheduled for completion in all four of the exchanges preparatory to their conversion to dial service.

The United Telephone Co. of Indiana, Inc., the second largest Independent in the state, presently provides service to

some 75,000 stations through its 74 exchanges. All three of the companies, headquartered in Warsaw, are a part of the United Utilities System, the second largest Independent telephone group in the nation.

The Jasper company properties were acquired in 1951 and Urbana in the latter part of 1959.

Three Companies Will Serve Tuttle Creek Area in Kan.

The Kansas Corporation Commission on Feb. 17 completed its decisions on which telephone companies should serve the areas above the high water level of the Tuttle Creek Reservoir, when the reservoir has been filled.

Three companies, The United Telephone Co. of Kansas, Abilene; the Southwestern Bell Telephone Co.; and the American Communication Co., Belleville, were given permission to serve areas that have been served in the past by the Home Telephone Co., Randolph; and by the Irving Telephone Co.

In authorizing the United Telephone Co. of Kan. to serve the Olsburg Telephone Exchange, the commission also gave the Olsburg company permission to cease business.

The Southwestern Bell Telephone Co. was authorized to revise its Waterville and Blue Rapids exchange areas and extend them into the Randolph area of the Home Telephone Co.

American Communication Co. was allowed to revise its Green exchange to serve territory above high water level presently served by the Home Telephone Co. which will go out of business when the American company takes over.

The question of who would provide telephone service to subscribers in the areas to be inundated by the Tuttle Creek Dam, the commission states, arose in 1956, when engineers found that construction of the dam would flood the Irving company and the Randolph company central offices, respectively, to depths of 50 feet and 40 feet. It was realized at that time that both companies were providing service to more subscribers above the high water line than below it.

The United States Corps of Engineers determined that there would be no inhabitants in the area below the high water level. Also, it was understood in 1956 that funds for construction of the dam did not include any funds other than those which would be spent on the area below the high water line.

As the Kansas commission recounts it now:

"We made it perfectly clear to the Corps of Engineers that telephone service would be discontinued to all of the telephone users above the high water line through no fault of the telephone users, and that we would not permit the telephone companies to cease operation until the Corps of Engineers had made adequate arrangements for telephone service not to be interrupted for those people presently using the service above the high water line."

The Irving Telephone Co. (TELEPHONY, June 22, 1957) asked the commission for authority to cease operation, in the area to be flooded by the reservoir. The company's plea was denied by the commission, because, then-commission chairman Marion Beatty said, about 120 customers outside the reservoir area would be left without telephone service if the company were allowed to quit. In June, the Irving company was denied a rehearing of its request to cease business.

Following the denial of this company's application, the commission, the Corps of Engineers, and Congress collaborated in the creation of a Special Act of Congress to provide "efficient and sufficient telephone service" to users living above the high water line, and with no construction cost to the individual telephone user.

Southwestern Bell, the American Communications Co., and the United Telephone Co. of Kansas cooperated with the commission and the Corps of Engineers, the commission says, to assure that all users above the high water line would have telephone service and not be required to contribute toward the construction of new telephone facilities.

The type of service rendered by both the Irving Telephone Co. and the Home Telephone Co., Randolph, was described as one-wire grounded magneto service, whereas the service to be provided by the three companies now authorized to serve the area of Tuttle Creek Dam will be automatic dial service.

Colo. Court Rules Booth Is Building in Burglary Case

A telephone booth is a building, the Colorado Supreme Court ruled on Feb. 22.

The high court made the ruling in upholding the burglary conviction of Joe Walter Sanchez of Golden.

Sanchez was arrested in August 1958 while attempting to break into a coin box in a telephone booth in Golden. He was tried and convicted in Jefferson County District Court.

He appealed his conviction on the grounds that the telephone booth he was captured in, is not considered a building within the meaning of the state law on burglary. The booth is separate from a nearby service station.

The high court, in an opinion by Chief Justice Leonard Sutton, ruled that all stationary structures in Colorado, no matter of what construction, are within the meaning of the term "building."

"A building is a structure which has the capacity to contain man, or animals, or habitation, or shelter," Justice Sutton's opinion said.

He also looked to the time when space burglars may appear on the scene.

"With the advent of the space age," he wrote, "Congress, or the state legislatures, may soon be amending such statutes to include those buildings not only resting on the earth's surface, but also those in space, as well."

Neb. Commission Resolution Urges End of Excise Tax

The Nebraska Railway Commission on Feb. 26 unanimously adopted a resolution urging Congress to permit the excise tax on local telephone service to be terminated on June 30 as federal legislation now provides, and to repeal taxes on all communication services "at the earliest practicable time."

The resolution says the federal excise tax distorts telephone rates, restricts the use of communications, is discriminatory, adversely affects the earnings potential of communications firms, and impairs the growth and improvement of services. Smaller companies are especially affected by this tax, the resolution stated.

Copies of the resolution were sent to the Nebraska delegation in Washington, the House Ways and Means Committee, the Senate Finance Committee, the National Association of Railroad &

(Continued on page 42)

your business subscribers

need these SPECIAL-SERVICE PHONES

EARN EXTRA REVENUE WITH THESE EXTRA-SERVICE PHONES!

type 88-T SPEAKERPHONE

Leaves hands free while you talk

World's most compact loud-speaking phone. Your subscriber moves about and does other work—while talking. He speaks through a tiny microphone in the base of the phone—hears through a separate speaker. Ideal for conferences.

Same size and shape as the Type 80. No separate control cabinet. No special power supply. Choice of 10 colors.

type 85 TELEPHONES

Two-line pickup and extension exclusion

Three different models fill special needs of your subscribers. Doctors, attorneys, insurance agents, realtors and many others are potential customers. Type 85-A gives your subscriber two-line pickup and signaling. Type 85-B provides extension exclusion. Type 85-C *combines* two-line pickup, signaling and extension exclusion. Choice of 10 colors to blend with any office décor.

type 87 MULTI-LINE PHONE

Complete switchboard service in one phone!

Low-cost phone for the small office. Three lines with hold feature on each line. Signaling feature built in. Optional: extension exclusion. Easily changed to two lines with intercom. In a P-A-B-X system, signal button operates incoming trunk transfer circuit. Choice of 10 colors.

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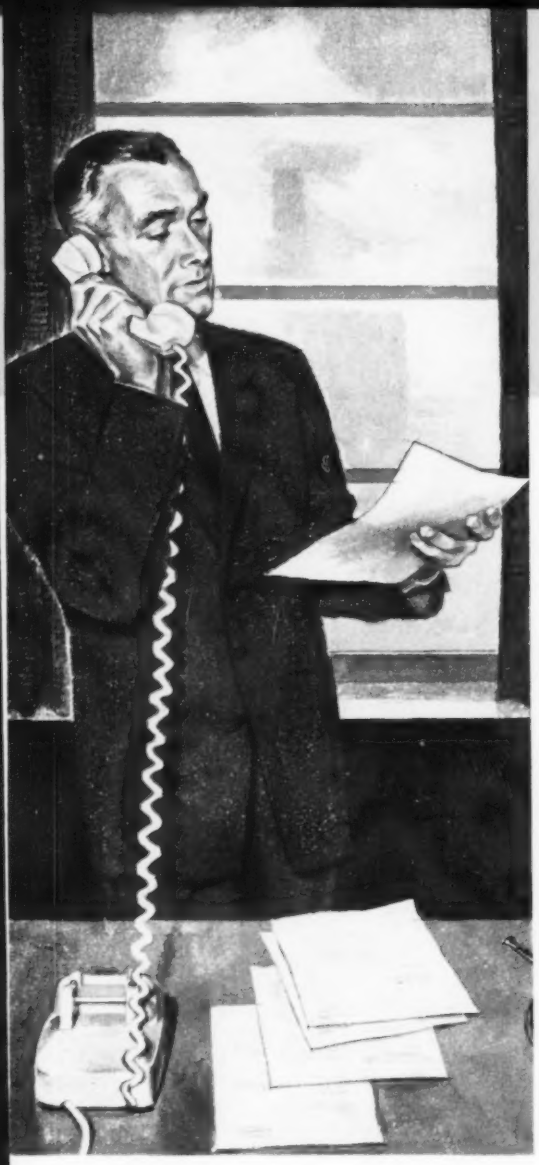
Saves time and steps around the office

Fingertip access to as many as five central-office, PBX or private lines. Pushbutton holding for up to five central-office or PBX lines. Automatic or manual exclusion of all extensions on line. Automatic signaling on intercom, PBX or private lines. Choice of 10 colors.



Businessmen in your area need these *special service* phones. And, the extra services you provide mean added revenue for you. Check the businesses in your area for sources of untapped revenue. Insurance agents, automobile dealers, and purchasing agents are just a few of the businessmen who make a lot of calls—businessmen who will appreciate AE *special-service* phones.

SALES AID HELPS SELL PHONES—To help you sell these phones we have a sales aid for you. These special-service phones are featured in a four-page circular that's designed to help you sell the business subscribers in your area. Request Circular 1929-A. Write Automatic Electric Sales Corporation, Northlake, Illinois. Or, call Fillmore 5-7111.

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OUTDOOR PHONE

Trouble-free service in any weather

Operates with indoor dependability. A *must* for cab stands, lumber yards, loading docks and other exposed locations. Locking door limits use—prevents abuse. This phone can be equipped with anti-noise handsets and loud-ringing bells for noisy locations.

HAZARDOUS-LOCATION PHONE

Safe service in dangerous atmospheres

U.L. listed for use in oil refineries, gas plants, laboratories and other hazardous locations. Sealed housing encloses all components that might produce sparks. If gases should penetrate the housing and explode, the explosion is contained within the phone—which is built to take it.

Utilities Commissioners, regulatory commissions in other states, the Federal Communications Commission, the Nebraska Telephone Association and USITA.

Authorize Small Increases For Wisconsin Company

The Wisconsin Public Service Commission on Feb. 22 granted the Dairyland Telephone Corp., Shawano, "very slight increases" (TELEPHONY, Oct. 3, 1959).

The company had requested an annual increase amounting to $36,790. The commission, however, authorized only $4,279, although during the past year, the Dairyland company, it was pointed out, had converted the Shawano exchange to dial service and provided EAS between Shawano and Bonduel and between Shawano and Gresham.

Principal differences between the commission's position and that of company officials involved depreciation charges, which the commission said should be cut by $8,501; and what constitutes a reasonable rate of return on the investment in the telephone plant.

The company's request was for a return of 7.50 per cent; the commission's order allowed only 6.51 per cent. The company's position is that in view of the present cost of borrowed money, the figure authorized is "wholly inadequate," and a higher rate of return must be earned for continued high quality service.

Old and new rates for the company are as follows:

	Old	*New*
One-party business	$7.90	$8.00
One-party residence	4.30	4.50
Four-party residence	2.95	3.00
Rural residence	3.20	3.25

Missouri Company Gets Go Ahead on Expansion Loan

The Wheeling Telephone Co. has been granted permission by the Missouri Public Service Commission to borrow $52,000 from the Stromberg-Carlson Co., to complete a remodeling program, including cut-over to dial service, it was reported on Feb. 25 (TELEPHONY, Oct. 31, 1959).

The company serves about 200 subscribers in the areas of Wheeling and Eversonville.

Ask Bond Sale in Florida

General Telephone Co. of Florida has asked the Securities & Exchange Commission to register 15 million dollars worth of first mortgage bonds. These are to be offered for sale through an underwriting group headed by Paine, Webber, Jackson & Curtis and Stone, Webster Securities Corp.

Special Offer

We have a limited supply of the popular book "Cable—Modern Methods of Fault Location, Installation and Splicing," By Daniel S. Seitz, which we are offering at 40 per cent off the regular prices.

This book of 80 pages—8½ inches by 11 inches—contains a reprint of 19 installments of an article entitled "Cable Splicing," by Mr. Seitz, published in TELEPHONY. It covers (1) the history of the development of cable; (2) composition and manufacture of cable; (3) methods of installing aerial, underground and building cable; (4) techniques and detailed instructions for splicing cable; (5) methods of locating and clearing cable faults; (6) instructions for pressure testing of cable.

It is an ideal book for regular cable splicers and their helpers, as well as a practical aid for employe training courses.

The new low price schedule for this book is as follows:

1 to 5 copies	**$1.00 each**
6 to 25 copies	**$ .85 each**
26 to 50 copies	**$ .70 each**
Over 50 copies	**$ .50 each**

Order your copies on the coupon below.

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Interim Decision Grants Raises At Two Cal. Exchanges

The California Public Utilities Commission, in an interim decision, on Feb. 25 granted the Western California Telephone Co., Los Gatos, permission to raise rates at its Morgan Hill and Novato exchanges (TELEPHONY, June 20, 1959).

Approval of rates for the Los Gatos exchange was withheld pending results of a study by Pacific Telephone & Telegraph Co. and the Western California company of extended area service.

A prior agreement between the two companies had been terminated on Nov. 13.

The commission said, "In view of the large impact which the extended service settlement has upon applicant's (Western California company's) Los Gatos operations and rates, and the current unsettled status of such matter, we will issue only an interim decision at this time. Applicant will be required . . . to keep the commission currently informed of its progress in negotiating a new extended service settlement agreement with Pacific."

In its application, the company had asked rates which would provide gross operating revenue increases of $256,000, which would have produced a rate of return of 6.88 per cent.

The decision did grant the full increases in basic rates requested for Morgan Hill and Novato and the full increase requested for miscellaneous charges for all exchanges.

The raise allowed in this interim decision, will increase annual gross revenues by $97,900 and net revenues by $44,300. Of these amounts, miscellaneous service charge raises account for $39,900, and basic service increases, which give effect to the expansion of the Morgan Hill and Novato base rate areas, account for $58,000.

These changes will give the company a return of 5.65 per cent on a depreciated rate base of $4,729,600 devoted to exchange operations (based on test year 1959), and an over-all rate of return of approximately 6.1 per cent,

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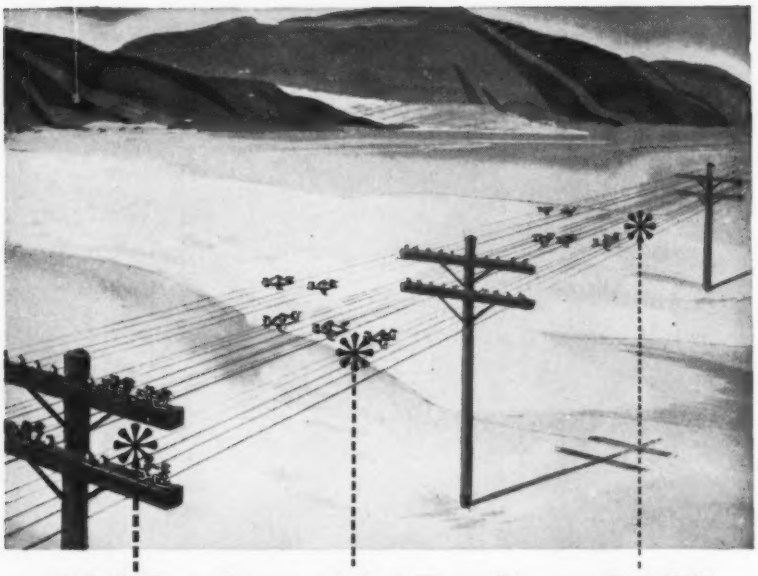

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- **NEW, IMPROVED DESIGN** . . . the cross-arm mounting slot **now extended to fit all standard 12" and 8" pin spacings.**
- **UNIQUE SPAN-POINT DESIGN** . . . the **only** bracket designed especially for mid-span transpositions . . . eliminates special transposition poles.
- **LIGHTWEIGHT** . . . non-corrosive aluminum cross-arm bracket—4 lbs.*; span-point bracket—3½ lbs.* *(including insulators and bushings)
- **ROLLER SYSTEM** . . . insulators roll, eliminating wire dragging, bracket distortion and protecting wire insulation in stringing.
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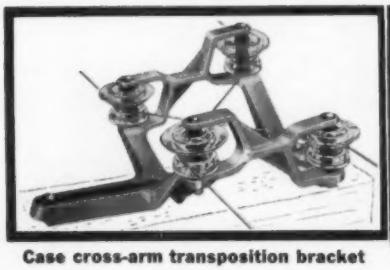
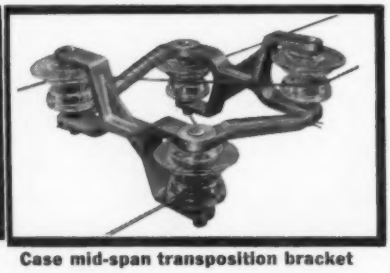


Case cross-arm transposition bracket



Case mid-span transposition bracket

after taking into consideration a return of 7.7 per cent on plant devoted to interchanged toll service.

The decision stated, "We find . . . a rate of return for intrastate toll operations of 7.7 per cent to be fair and reasonable."

Comparison of exchange operations at present rates submitted by the company, and the figures adopted by the commission, are as follows:

Operating Revenues	*Company*	*Adopted*
Local service ..	$ 980,500	$ 982,800
Miscellaneous ..	120,970	129,600
Uncollectible ..	(2,483)	(2,100)
Total revenues	$1,098,987	$1,110,300
Operating expenses	422,542	436,700
Depreciation expense	223,737	213,300
Taxes—other than income ..	179,858	160,800
Income taxes*..	70,116	76,700
Total expenses & taxes	$ 896,253	$ 887,500
Net revenues...	$ 202,734	$ 222,800
Avg. depreciated rate base	$4,831,849	$4,729,600
Rate of return..	4.20 per cent	4.71 per cent

*The commission staff estimated this figure at $85,900.

The decision adopted income taxes lower than those estimated by the commission staff as a result of deducting from the income tax the return on the company's reserve for deferred income taxes accrued through the use of accelerated depreciation. The return on such reserve was computed at 6.1 per cent, the over-all rate of return the commission found would result from the increased rates granted.

Present and authorized rates, effective Apr. 1, are as follows:

	Present	*Company proposed and PUC authorized*
Morgan Hill		
One-party business	$7.00	$10.50
Two-party business	5.75	8.50
Suburban business	5.25	7.75
One-party residence ...	4.30	5.80
Two-party residence ...	3.75	4.85
Four-party residence ..	3.20	4.10
Suburban residence	3.70	4.70
Novato		
One-party business	6.50	9.75
Two-party business ...	5.25	7.75
Suburban business	4.75	7.00
One-party residence ...	4.05	4.85
Two-party residence ..	3.50	4.30
Four-party residence ..	2.75	3.55
Suburban residence ...	3.20	3.80

Authorize Stock Split; Ask Financing OK in N. C.

The North Carolina Utilities Commission on Mar. 3 authorized the Monroe Telephone Co., Inc. to split its stock 5-for-1. The company plans to exchange five shares of its $10 par value stock

This Is The New "Attracto Light" For Outdoor Telephone Booths!

Low-Cost Way To Increase Your Paystation Revenue

Here's a new, low-cost way to increase the revenue of your outdoor paystation booths. The Attracto Light makes booths easy to see day or night. It attracts paystation users by flashing continuously—four seconds on and three seconds off.

The Attracto Light costs only $8.80 or $9.80, depending on quantity. It's a rugged one-piece unit, consisting of a blue acrylic bowl attached to a cast aluminum base with snap ring.

Installation is easy. You simply make a 1/2" hole in the top of the booth for electrical connection. The base of the Attracto Light covers this hole and is attached to the booth by a special metal-to-metal adhesive on its base. If local regulations prohibit flashing lights, you simply disconnect the circuit breaker.

Dimensions: 8" diameter, 8" height. Net weight: approximately 4 lbs. Price each: 1 - 49, $9.80; 50 or more, $8.80.

Order revenue-building Attracto Lights today

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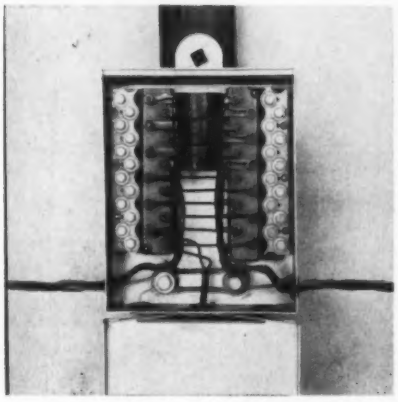
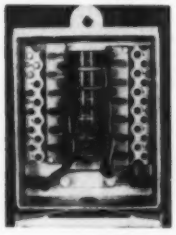
TERMINAL LOADING CASE



for 6, 11, and 16 pair Rural Distribution Wire

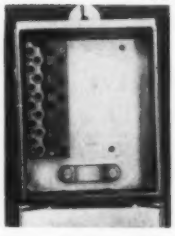
Cast aluminum combination terminal box and housing for loading coils. Designed to be used for rural distribution wire for 6, 11 and 16 pair capacity and available in 8 types to meet your requirements. Terminals are available with or without protectors and designed to accommodate loading coils of 88 MH or 44 MH inductance.

Types 177A-177B



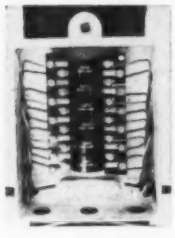
Contains two protected terminal strips complete with type 637A(88MH) or 637 B (44MH) coils.

Type 177F



Contains one protected terminal strip —no coils.

Types 177C-177D



Contains two non protected strips complete with type 637A(88MD) or 637B(44MH) coils.

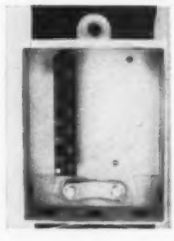
Type 177G

Contains two non protected strips — no coils.

Types 177E

Contains two protected terminal strips—no coils.

Type 177H



Contains one non protected strip—no coils.

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for each share of $50 value common capital stock.

In a financing petition before the commission, the Morris Telephone Co., Roxboro, asked to borrow $150,000 from the Life Insurance Co. of Virginia at 6 per cent interest. The loan would be payable over a 22-year period.

Hear Dial Rate Plea; OK Interim Rates, Tolls in Kan.

The Kansas Corporation Commission on Mar. 21 was to hear the application of the Northern Kansas Telephone Co. Ottawa, to make permanent the temporary dial rates at Rossville, Delia and Silver Lake. These exchanges were cut over to dial service about a year ago. Since that time, the temporary rates have been collected under bond.

•

The commission on Feb. 24 allowed the Holyrood Telephone Co. to charge interim dial rates under bond. The Holyrood exchange was converted on Feb. 16.

•

Also on Feb. 24, five telephone companies were authorized to discontinue extended area service between nine communities and to charge tolls of 10 or 15 cents for calls between these exchanges.

Companies and exchanges affected are as follows:

Mapleton, Piqua and Bucyrus exchanges of Northern Kansas Telephone Co., Ottawa.

Blue Mound exchange of Blue Mound Mutual Telephone Co.

Louisburg exchange of Farmers Mutual Telephone Co., Louisburg.

Prescott and Fulton exchanges of Craw-Kan Telephone Cooperative, Girard.

Yates Center and Neosho Falls exchanges of Southwestern Bell Telephone Co.

Authorize 26 Per Cent Raise for Ohio Company

The Ohio Public Utilities Commission, it was reported on Feb. 24, has granted the Northwestern Telephone Co., Defiance, a 26 per cent rate increase affecting its 5,100 subscribers (TELEPHONY, Jan. 24, 1959).

The company had asked for $120,700 additional revenue, but was granted $64,200 of this amount.

Illinois Rate Hearing Set

The Illinois Commerce Commission on Mar. 10 was to have heard the application of the Farmers Telephone Co. of Lee County, Franklin Grove, for permission to raise rates at its Sublette exchange.

PLANT MAN'S NOTEBOOK

Concluded from page 21

to furnish 1.2 million dollars of the communication equipment used in the Midwest Relay Station. A total of 600 reperforators, 400 transmitters, and 15 page-printers comprise the Kleinschmidt equipment used in this station.

Like the switching system itself, most of the teletypewriter equipment used in this station was designed specifically for use in the automatic switching concept. The equipment has numerous new features heretofore unassociated with other units capable of the speed and reliability required. It includes a remarkable transmitter-distributor which is programmed to cancel transmissions, to automatically insert message serial numbers, and to act as a medium for transmitting start-of-message and end-of-message indicators without the use of a teletypewriter tape. In addition, alarms are provided which indicate either malfunctions in equipment and/or circuit failure, thereby assuring maximum security against error or delay in messages.

One of the major features of the equipment in the new station is its versatility. In line with the objective of speeding up the flow of communications, Midwest Relay is designed to operate at a speed of 100 words per minute. The system, however, can also operate at 60 and 75 words a minute, thereby making it fully compatible with all other types of systems and equipment now in use.

The Midwest Relay Station represents an important step in the development of a modern, high-speed, automatic communications system to meet the increasingly complex requirements of our modern Army. It further serves as an economical focal point through which domestic government installations can conduct routine business with speed, efficiency, and dependability.

"The Midwest Relay Station adds significantly to the Army's global communication capability," General Nelson said. "Its dedication is also one of the major events of the Army Signal Corps' centennial year and is of special interest to military and civilian communicators throughout the world," he added.

The trip back from Kansas City to Washington was routine on a United DC-7C. With the help of a good tail wind, we made it in 2 hours and 45 minutes.

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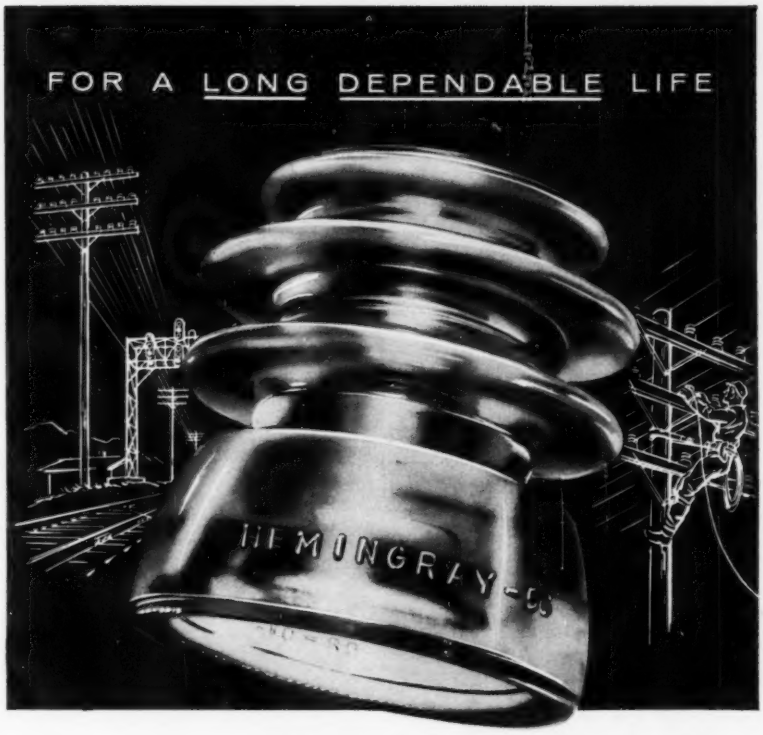
"The making of tomorrow requires a sense of service that has something to do with reverence and compassion for life."—NORMAN COUSINS.



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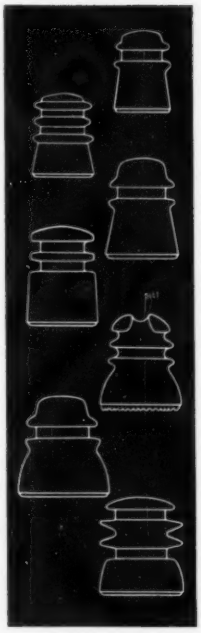

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Hemingray has pioneered many insulator developments to keep pace with requirements, improve communication systems, assure you a dependable source of supply.

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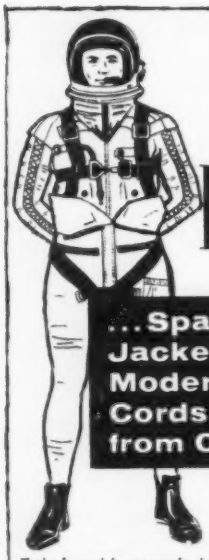

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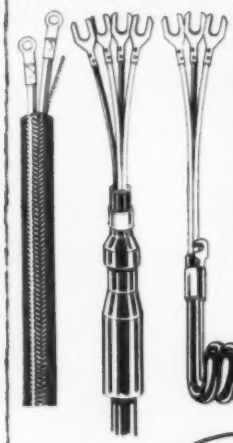
Superior to Neoprene in toughness and crack resistance, this P.V.C. (Poly-Vinyl-Chloride) jacketing has other advantages, too. Jacket's smoother inner surface permits conductors to flex freely . . . eliminates binding and fracturing —thus assuring longer noise-free life.

P.V.C. jackets are standard on all COMCO straight cords and Spiraflex Rectractile Cords . . . choice of black or ten colors.



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REA Approves Seven Loans Totaling $3,470,000

MORE than 4,600 subscribers in seven states will receive new or improved telephone service with the help of seven telephone loans approved during the week of Feb. 15 by the Rural Electrification Administration. Nearly 63 per cent of these subscribers will receive telephone service for the first time. Details are as follows:

Sierra Telephone Co., Inc., Raymond, Cal.; $185,000; Feb. 16.

This loan will help finance initial dial telephone service to 360 subscribers and will help complete the borrower's authorized system.

Loans to the Sierra company now total $538,000. Upon completion of all construction provided in the loans, the borrower will be providing dial telephone service to 913 subscribers.

•

Cunningham Telephone Co., Inc., Glen Elder, Kan.; $254,000; Feb. 16.

This loan will help the borrower to furnish improved service to 373 subscribers, and initial service to 42 subscribers.

The existing subscribers now receive magneto and battery service from the Cawker City Mutual Telephone Co. The borrower plans to acquire this company, and construct a new dial central office at Cawker City.

REA loans to the borrower now total $608,000. Upon completion of all facilities provided in the loans, the company will be serving 1,193 subscribers through three dial exchanges. The exchanges at Glen Elder and Jamestown are in operation, providing service to approximately 640 subscribers.

•

The Mid-South Telephone Co., Inc., Baton Rouge, La.; $213,000; Feb. 16.

The company will be enabled to provide initial dial telephone service to 197 subscribers in the borrower's present service area.

The loan also includes funds intended to finance acquisition of the Tishomingo (Miss.) Telephone Co. This company now provides magneto-type service to 117 subscribers.

The borrower plans to construct a new dial central office building at Tishomingo.

Loans to the Mid-South company now total $576,000. Upon completion of all construction provided for in the loans, the borrower will be operating three exchanges, providing dial telephone service to 1,033 subscribers.

•

The Diller (Neb.) Telephone Co.; $54,000; Feb. 16.

The borrower will be enabled to furnish initial service to 26 subscribers and improved service to 72 subscribers.

The subscribers who will receive improved service are now served by the Virginia Telephone Co. which operates a magneto exchange. The borrower proposes to acquire this company and construct a new dial central office at Virginia.

REA loans to this company total $436,000. Upon completion of all construction provided for in the loans, the borrower will be providing dial telephone service to 874 subscribers. The exchanges at Diller, Harbine and Odell are in operation, serving 720 subscribers.

•

The Allied Telephone Co., Little Rock, Ark.; $705,000; Feb. 17.

This loan will help enable the borrower to provide initial service to 1,453 subscribers, and to complete its authorized systems.

REA loans to the Allied Telephone Co. now total $3,138,000. Upon completion of facilities provided for in this loan, the borrower will be operating 22 dial exchanges serving 9,127 subscribers. Nineteen of the exchanges are in operation, providing dial telephone service to approximately 7,000 of the subscribers.

•

The Butler (Ala.) Telephone Co.; $88,000; Feb. 18.

With this loan the company will be enabled to serve 309 new subscribers in the Pennington exchange.

REA loans to the Butler company now total $815,000 which will bring new and improved service to 1,779 subscribers. The system, when complete, will consist of the Butler and Pennington exchanges. Approximately 800 subscribers are now receiving dial service through the Butler exchange.

•

The Enon Valley (Pa.) Telephone Co.; $1,971,000; Feb. 18.

This loan will help the borrower to improve service for 1,316 rural subscribers, and to provide initial service to 524 subscribers.

The Enon Valley company, a new REA borrower, serves 1,178 subscribers

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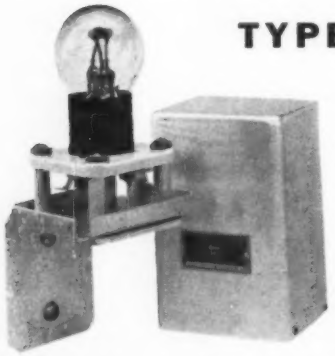

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through dial exchanges at Darlington and Enon Valley. The company plans to acquire the facilities of the Albion Telephone Co., which provides common battery service to 1,290 subscribers through an exchange at Albion. The borrower also plans to acquire the facilities of the Springfield Telephone Co. which provides common battery service to 570 subscribers through one exchange in West Springfield.

The systems to be acquired will be consolidated with the borrower's system.

The present central dial office building in Enon Valley will be retained. New dial central offices will be constructed at Darlington, West Springfield, and Albion. The new structure planned for Albion will house both dial central and commercial facilities.

Harold G. Payne is the president and manager of the Enon Valley Telephone Co.

60's FOR SELLING

Continued from page 30

that at all times in the future the same formula would be used. The overall status of our economy, the degree to which inflation is a factor in all prices, might cause the commission to feel justified at some future date to use a different method.

"However, the industry can rely on the fact that if the conditions are identical, the commission would use the same standards in making its determination. . . ."

In determining current value, Mr. Rasmussen stated there are many factors that must be considered: Is it the sale price of the utility? If much of the property is of the type that serves only one purpose, would a sale price be an accurate standard to use? Is it replacement cost new, or is it the cost of replacing the service? Obsolescence is also a factor that has to be considered. Most of the thinking concerning current values is that it should primarily consider the cost of replacing the service.

"Modern techniques, in some cases, result in lower replacement cost rather than higher cost. For instance, work in laying a cable with modern digging machines can be done on a per-foot basis cheaper today than 20 years ago.

Depreciation Factor

"Another problem concerns the status of property that has been entirely depreciated.

"In cases where the patrons of a utility, for a period of many years, have paid a rate that has completely depreciated a particular unit of a plant and this unit is still used and useful in the over-all operation of the plant, it is my judgment that, if consideration is

given to current value, the value attached to the totally depreciated unit should be subtracted from, rather than added to, a rate base," he concluded.

America is on the road leading inevitably toward socialism and if the trend continues, this country's businessmen will find themselves sitting on curbs and dressed in patched and tattered overalls in 15 years, Dr. Nicholas Nyaradi, former minister of finance in Hungary, told the convention.

Dr. Nicholas Nyaradi is now an American citizen and director of the Institute of International Studies, Bradley University, Peoria, Ill.

Present Trend Dangerous

"If you think," Dr. Nyaradi said, "that this is an outrageous prophecy, then the only concession I am willing to make is that if the present trend continues, in 15 or 20 years all of you here will draw your weekly meager paychecks from your state government or from our federal government in Washington, because America is heading toward socialism."

Dr. Nyaradi, drawing on his long experience with Russian officials while he was Hungarian finance minister, said this is what the Communists are waiting for:

"Khrushchev is a fanatic Communist who strongly believes that our country —sooner or later—will collapse, from within, under what he thinks are our own internal difficulties and contradictions. He simply doesn't believe it is worthwhile for him to risk a shooting war when our country will be destroyed anyhow from within."

Labor Role Noted

Dr. Nyaradi said the trend is that American labor leaders are making a definite attempt to grab political power and political supremacy.

"Don't get me wrong, I am a wholehearted supporter of the American labor movement, which today is one of our strongest defenses against communism.

"However, what our wonderful friends in the labor movement seemingly do not know is that whenever and wherever labor has achieved political influence, either by creating its own political party or by infiltrating another political party, this has led inevitably—whether labor wanted it or not—to more or less socialistic institutions. It just cannot be otherwise."

Socialism, once achieved, is just as detrimental to labor as it is to business, he said, and whenever a labor party has taken over a country's government this has led inevitably to the destruction of the country's economy.

"What you as businessmen have to

MECHANIZE SCREW ANCHOR INSTALLATION

You've got the means... your power hole-digging equipment. Use it to install Chance Screw Anchors in 5 to 8 man-minutes... *from the time the equipment is moved into position until the anchor is ready for the guy.*

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Less physical effort, better employee relations

Contact your Chance Representative. Now. He'd like to tell you more about mechanized anchor installation, show you test results and help you apply this new technique to save time, cut costs, and improve your anchoring.

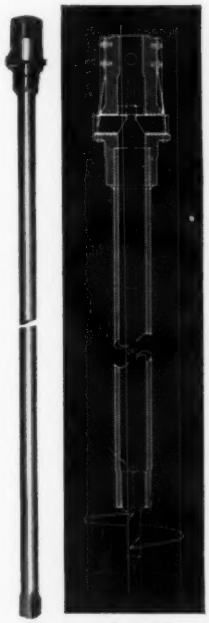

Diagram above shows how the special wrench fits the anchor. Wrenches are made to fit all popular makes of earth-borers.

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do is not start an anti-labor campaign, but stand up and tell the American people what business has done in order to make this country as strong and as healthy and as powerful as it is today. Tell them our economy is based on the system of checks and balances between labor and management and all you want is not domination but a fair share for yourself and your business. And if you don't do that, you're going to be in trouble."

The final session of the convention was devoted to an explanation of the Minnesota association's standard telephone tariff and a discussion of the legislative outlook in Washington as it affects the telephone business. The latter was covered by Association Secretary Vogt.

Directors elected by the convention are P. M. Ferguson Jr., of Mankato, John G. Holland of New Ulm, Vies Martinsen of Grand Meadow, C. R. Cashel of Worthington, and Herbert Lien of Blackduck.

Other directors are H. R. Bollinger of Waconia, Eldon Eckles of Blue Earth, K. P. Ellefson of Ada, H. L. Ericson of Hector, A. E. Lindekugel of Fairmont, Dell Ludenia of Osakis, C. M. Ostby of Erskine, K. M. Peterson of Kerkhoven, W. L. Stocks Jr. of Minneapolis, and A. G. Stradtman of St. James.

The directors re-elected the following officers: President, Mr. Ostby; vice president, Mr. Ellefson, and secretary-treasurer, Keith W. Vogt.

Pa. Independent Granted Raise at Nine Exchanges

The Pennsylvania Public Utility Commission on Feb. 26 granted a $110,000 rate increase to the Commonwealth Telephone Co., Dallas (TELEPHONY, June 20, 1959.)

The commission said this increase, which affects nine exchanges, would give the company a net income of $1,153,980 annually, providing a 6.17 per cent return on its investment.

The increase will affect 8,161 subscribers in the Pocono Lake, Mansfield, Towanda, Wellsboro, Camptown, Leraysville, Ulster, Covington and Tioga exchanges.

Drop Oregon Raise Request

The Lincoln-Tillamook Telephone Co., Oceanlake, was given permission by the Oregon Public Utility Commissioner on Feb. 26 to withdraw its request for a rate raise (TELEPHONY, Feb. 6).

Incorporate in Kentucky

The Evarts Telephone Co., Inc., Louisville, has filed articles of incorporation in Kentucky. Incorporator is Lively M. Wilson.

Obituaries

ERNEST R. HOOD, 70, former president of California-Oregon Telephone Co., died on Feb. 2 in Portland, Ore.

Mr. Hood, who was born in Pineville, N. C., retired in August 1959 from the California-Oregon company, which is now a part of the Oregon-Washington Telephone Co., Hood River, Ore. The Oregon-Washington company is now the West Coast affiliate of United Utilities, Inc.

Prior to the merger of Columbia Utilities Co. into the Oregon-Washington company, Mr. Hood was secretary-treasurer and a director of the Columbia company.

At the time of his death, he was a director of the Valley Telephone Co., Silverton, Ore. He was also a partner in the investment securities firm of Hood Brothers, Portland.

Mr. Hood had served as a director of the Oregon Independent Telephone Association.

Survivors include his wife, Ina Harrison Hood; sons, Ernest R. Hood Jr. of Medford, Ore., and William H. Hood of Hollywood, Cal.; brother, D. O. Hood of Medford, director of and consultant for the Oregon-Washington Telephone Co.; sister, Florence H. Kirby, also of Medford, and seven grandchildren.

•

JOHN EDWARD CLINE, 58, a retired executive of the United Telephone Co. of the Carolinas, Southern Pines, N. C., died on Feb. 29 in Southern Pines.

Born in Springfield, O., Mr. Cline grew up in Indianapolis, Ind. and joined the telephone industry with his father, the late Edward L. Cline who was manager of companies in Toledo, O. and Indianapolis.

John Cline moved upward through various positions in Indiana and Iowa, going to Southern Pines in 1944 as vice president and general manager of the former Central Carolina Telephone Co., now the United Telephone Co. of the Carolinas.

He retired in 1958 and had spent most of his time at his winter home in Ft. Lauderdale, Fla.

He was a member of the Independent Telephone Pioneer Association.

Survivors include his wife, the former Iris Campbell of Lebanon, Ind.; son, Robert Edward, a student at Duke University; mother, Mrs. E. L. Cline of Indianapolis; sister, Mrs. Helen McFadden of Miami Beach, Fla.; and brother, Ralph Cline of Hollywood, Fla.

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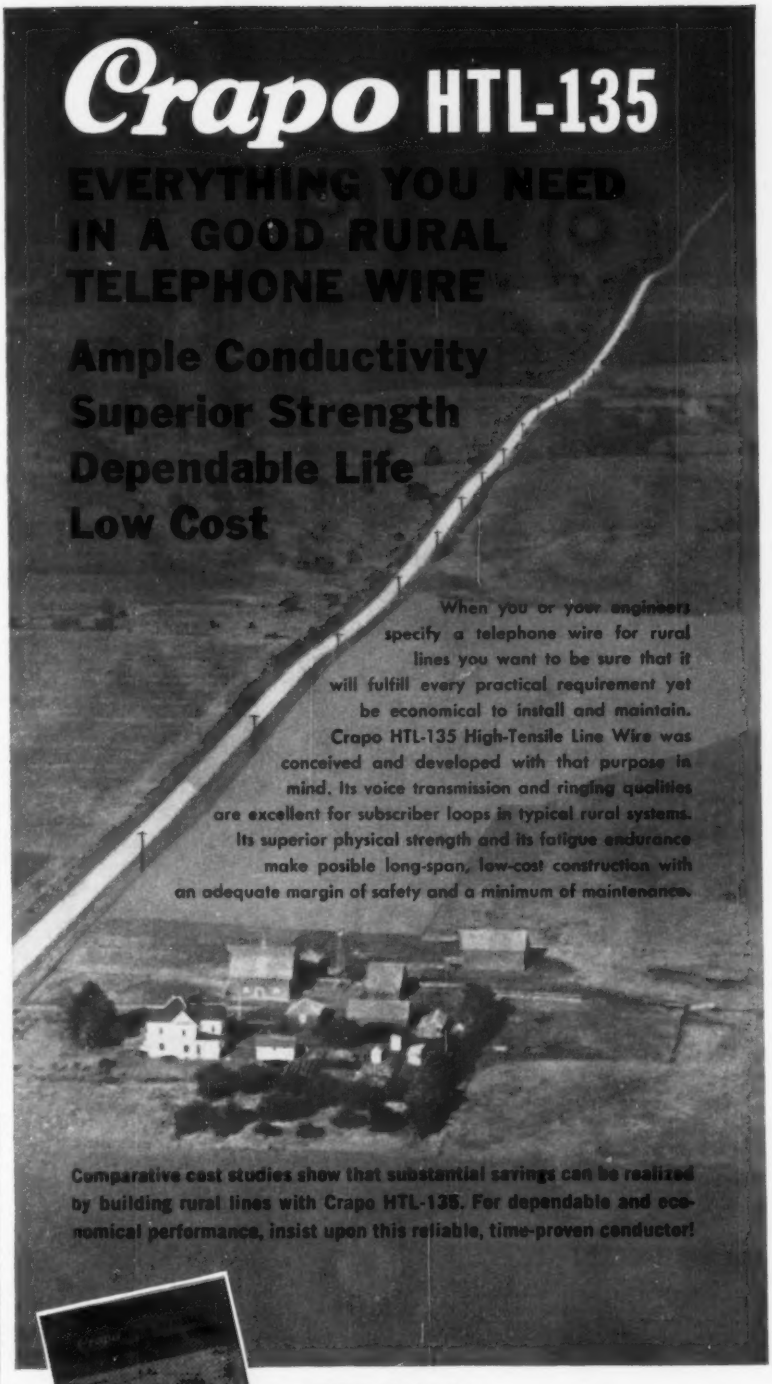
MRS. MABEL L. GRISWOLD, 78, died on Mar. 4 in Clifton Springs, N. Y. Her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husband, Hovey H. Griswold is chairman of the board of the Trumansburg Home Telephone Co. and the Ontario Telephone Co.; her son, W. Malcom Griswold is president of both companies.

A third generation of the family, grandsons, Robert and John Griswold, are also affiliated with these companies.

Both Hovey H. and W. Malcom Griswold have been active in affairs of the New York Telephone Association. At the present time, the younger Griswold is treasurer.

Besides those mentioned, survivors also include another grandchild, Susan Griswold and two great-grandchildren.

N. Y. Bell Executive Elected A Vice President, AT&T

Wellington Powell has been elected vice president in the operations division of the American Telephone & Telegraph Co., effective Mar. 1.

Mr. Powell is now operations vice president and a director of the New York Telephone Co.

He started his telephone career as a business office representative in Manhattan in 1921 and became a vice president 25 years later. He was successively vice president and general manager of the upstate area, public relations vice president, vice president and general manager of Manhattan-Bronx-Westchester and, since 1955, operations vice president.

Born in Morrisville, N. Y., he attended Scotia, N. Y., High School and Colgate University, of which he is a trustee.

Students in New York Build Step Type Exchange

A group of Seneca Vocational High School boys in Buffalo, N. Y. have completed what is believed to be the first student-made step-type central office exchange in the United States.

A dozen Seneca students worked on this project, which performs all the functions of a complete telephone central office.

The exchange is located in a well-lighted, spacious classroom in the school's communication department, presided over by Edward E. Schall, senior telephone instructor. Mr. Schall has spent 37 years on his job with no apparent diminution of enthusiasm.

He explains that the new installation's main function is to connect "subscribers" with one another, just as they are connected in business establishments.

Used with the project is a PBX switchboard, the same type used in business offices or on private calls.

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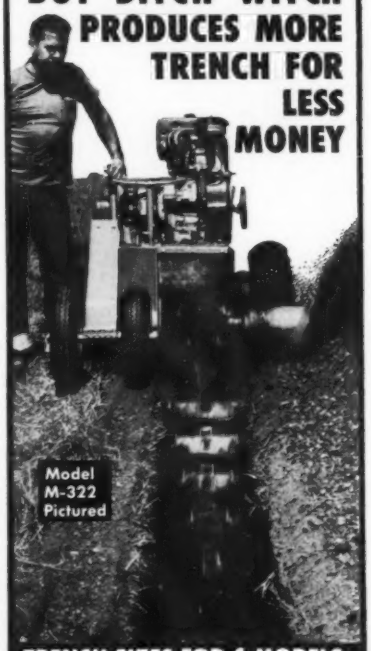

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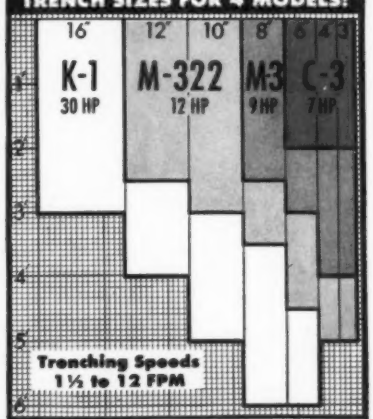

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telephone system of a city," said Mr. Schall.

All sorts of telephonic facts and figures were cited by the instructor, but the salient ones were that 50 lines connect with the central system, and that more than 150 student hours of work are involved.

Student skills employed in the project include blueprint reading, plant layout, inter-connecting, soldering, testing and installing.

"This, to my knowledge, is the first time such an intricate job has been completed by students," said Mr. Schall. "The boys love it—they work overtime on it. There's no urging them. They actually fight for a chance to work on it."

Basic materials used in the telephone central office project are forms and relay equipment bought by the local board of education. School authorities feel that installing the equipment calls for more than average ability, and boys selected were therefore, chosen for their special skills.

Cooper Named Equipment Engineer for N. Y. Company

John D. Cooper has been appointed equipment engineer for the Rochester Telephone Corp., according to an announcement by William A. Pitbladdo, chief engineer.

J. D. COOPER

Mr. Cooper joined the company in 1947 as an assistant engineer after serving three years with the Stromberg-Carlson Co.

He is a graduate of the Brooklyn (N. Y.) Technical High School, and received a bachelor's degree in electrical engineering from Rensselaer Polytechnic Institute. He is an associate member of the American Institute of Electrical Engineers and is an evening instructor at the Rochester Institute of Technology.

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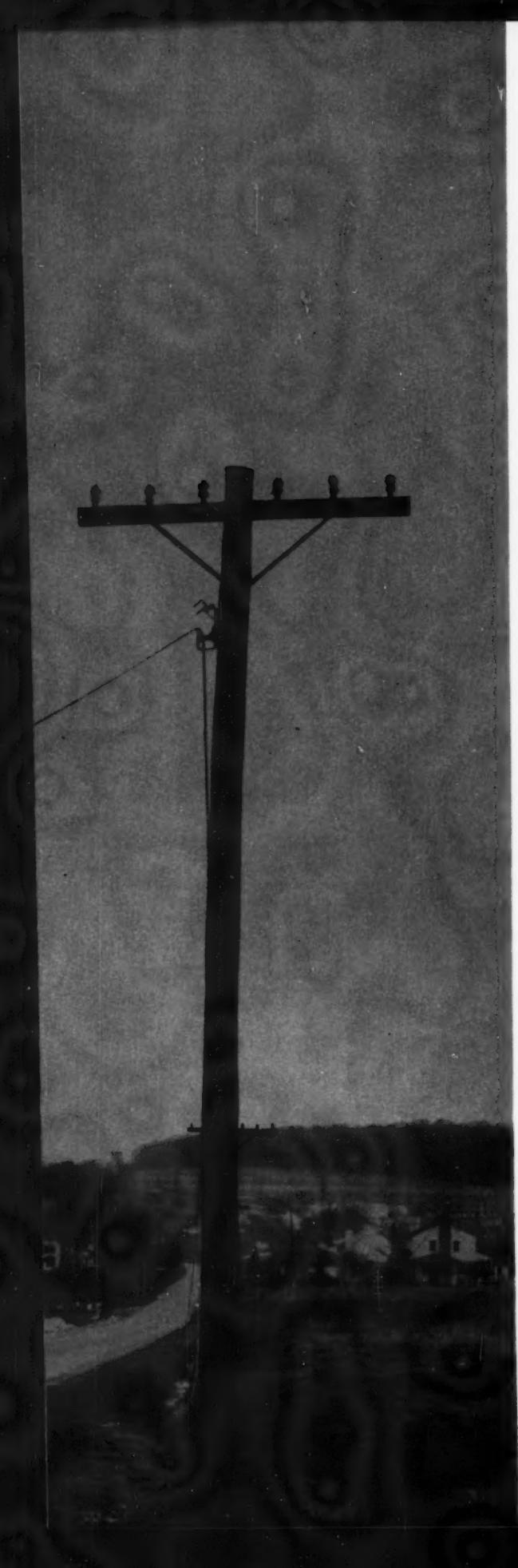

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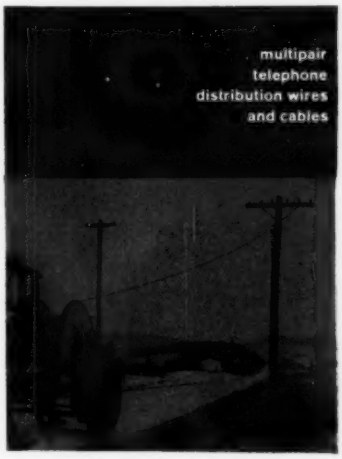
You'll find full ordering information on Multi-Pair Distribution Wire and Cable in General Cable's new catalog. Ask your AE representative for a copy or write: *Automatic Electric Sales Corporation, Northlake, Illinois.*



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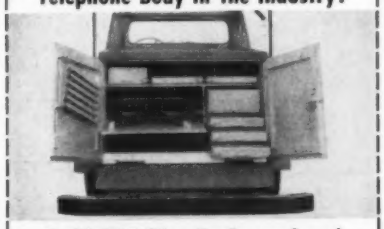

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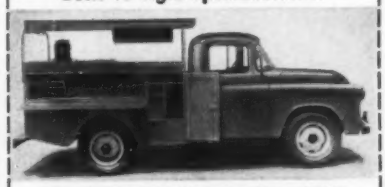

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Steele Heads United of Ind. And Ohio Telephone Service

The board of directors of the United Telephone Co. of Indiana, Inc., Warsaw, announced on Mar. 1 that George A. Steele has been elected president.

A similar board action by the Ohio Telephone Service Co., Lima, Ohio, has also placed him in the presidency of that organization.

Mr. Steele was formerly vice president and general manager for both companies. A 31-year company veteran, he succeeds the late Ralph F. Lucier.

It was also made known that Paul H. Henson of Kansas City has been appointed to serve on the board of both companies and as a vice president. He is executive vice president for United Utilities, Inc., the parent company, with executive offices in Kansas City.

Other members of the board of directors are: vice president, T. A. Danielson of Warsaw; vice president, H. D. Clingenpeel of Leesburg; chief engineer, R. E. Daniel of Warsaw; general plant superintendent, C. H. Burris of Warsaw; general traffic superintendent, J. C. Cluen of Warsaw; A. M. Campbell of Indianapolis, and C. A. Scupin of Abilene, Kan.

United's Warsaw-headquartered utilities provide service to over 108,000 telephones in 47 Indiana and Ohio counties through 97 exchanges. They have pioneered in Indiana with the establishment of Direct Distance Dialing (DDD) and microwave relay transmission service. Presently, United of Indiana operates nearly 1,400 miles of microwave circuits, and provides and makes available DDD facilities to almost 50 per cent of the Indiana towns and cities equipped for this type of service.

Southern Bell T&T Elects Malone and Stone to Board

Frank M. Malone and Joe S. Stone, vice presidents of the Southern Bell Telephone & Telegraph Co., have been elected members of the board of directors.

Mr. Malone is vice president, operations for the area comprising Alabama, Kentucky, Louisiana, Mississippi, and Tennessee.

Mr. Stone serves as vice president, operations for Georgia, Florida, North Carolina, and South Carolina.

Mr. Stone, a native of Kentucky, began his career in 1928 in Louisville. He has held responsible assignments in Kentucky, North Carolina, Florida and Georgia.

He was elected a vice president of Southern Bell in 1957.

Mr. Malone is a native of Alabama,

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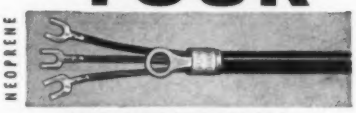
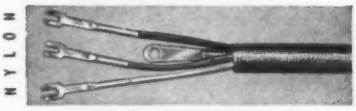


BEST



BUY!

Are you familiar with the features of these fine cords?

NEOPRENE covered cords are a highly serviceable cord, extensively used in a wide variety of services. They are moisture and grease proof . . . easy to keep clean.

NYLON covered cords are a relatively new development in telephone cords. Their fine smooth texture makes them the preferred cords for switchboard use. They give long service. Preferred by operators because of their fast, easy handling.

COTTON cords are in standard use everywhere. Their fine woven wrap makes them very serviceable for all around purposes.

Take your choice—Neoprene, Nylon or Cotton. They're all high quality cords made in accordance with Runzel high standard of quality. We carry a large stock of cords for every purpose.

Our geographical location means QUICK SERVICE.

RUNZEL
Cord and Wire Co.
4723 W. MONTROSE AVE.
CHICAGO 41, ILL.

and began his career with Southern Bell in 1928.

He has had assignments in Georgia, North Carolina, Mississippi, and Alabama.

He served as assistant vice president with the American Telephone & Telegraph Co. in New York for one year.

He was elected a vice president of Southern Bell in 1951.

Book Review

"Independent Telephony in Georgia," by E. B. Emrey; 5" x 7"; hard cover; 131 pages; $4.09, including postage.

"We in the telephone business, owe a debt to our heritage and it must not be forgotten," E. B. "Judge" Emrey writes in the foreword to this book.

Mr. Emrey, who retired from Southern Bell Telephone & Telegraph Co. in 1947 as Georgia manager, after 36 years with the company, feels that "no one can afford to reject the history and tradition that put us where we are with no thought of how we arrived there."

His book gives a comprehensive history of the beginnings of, and the advances made thus far, in Independent telephony in Georgia, giving credit to telephone people who have contributed to this progress.

The author states that the printing of the story was made possible through generous donations from telephone friends and that proceeds from its sale will go to charity.

In nine chapters, the book covers:

Communications before telephone.
Battle for the patents.
Early operation of Independent companies.
Independent telephone associations.
Georgia operations.
Early exchanges in Georgia.
Northern capital.
Independent telephone company statistics.
History of exchanges, companies, owners and operators in Georgia.

The history is based mainly upon the gains made by Independent telephone companies in Georgia since World War II. "Without this progress," Mr. Emery states, "there would have been no reason for recording events."

The book can be purchased from E. B. Emrey, 353 Coventry Road, Decatur, Ga.

Bell System Offers Awards For Company Architecture

The Bell Telephone System, which is the nation's biggest private builder, is taking a new approach to a problem faced by nearly every builder—how to get good architecture economically.

A panel of 11 Bell System architects

Comtel®
U.S. PAT. 2,844,720

DATA TRANSMISSION and TELEGRAPH TERMINALS

RFL TERMINAL EQUIPMENT
is being used with satisfaction by Railroads, Pipe Lines, Telephone Companies, Toll Highways, and Public Utilities throughout the world.

Radio Frequency Laboratories offers a complete line of models which are available with various features included to insure lowest possible cost to the customer for a given installation and application. Therefore, he is never penalized cost-wise for equipment features not desired or required.

The equipments are extremely versatile and, therefore, may be utilized in practically all data transmission and telegraph applications. A number of accessory equipments are available such as electronic and relay repeaters, party line keyers, DC hybrids, etc., to insure system compatibility.

MODEL 995

Low cost frequency shift telegraph terminal including all essential controls, power supplies and utilizes printed circuit modules.

The Model 995 is an all electronic terminal designed for data transmission and telegraph applications at speeds up to 100 wpm. The equipment comes complete with all necessary filters, equipment and loop power supplies and is available packaged as either a single or dual unit. Fourteen 100 wpm channels are available from 765/2975 cps.

MODEL 1601C

Data Transmission and Telegraph Terminal featuring plug-in frequency determining components, jack fields, and high speed circuitry.

The Model 1601C retains all the features of the Model 995 and offers the additional advantages of a carrier and loop jack field accessible through the front cover and plug-in frequency determining components. Channel arrangements are available to permit operation of either eighteen 100 wpm, twenty-five 75 wpm, or six 200 wpm channels between 400 and 3300 cps.

MODEL 1220

Completely transistorized Terminal temperature stabilized for long life, reliable service at reduced power requirements.

The Model 1220 retains the essential features of the Model 1601 but is a completely transistorized unit which may be operated directly from batteries with very low current drain or normal AC power facilities. The equipment is completely modular in design and accessory jack fields, power supplies, and front panels are available as required.

SEND FOR TECH. DATA

For additional information, including application data, write or phone DE 4-3100. Demonstrations available by local representatives.

WE CAN HELP YOU — Our Applications Department is ready to assist you in your control, telemetering or communications problem.

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Designed Especially for Switchboard Operators

Made of Soft Pliable Vinyl Foam

- **Easy on Ear**
- **Inexpensive**
- **Attractive**

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Thanks for your splendid response. All orders being shipped promptly.

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LONGER LIFE
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Light in weight and clean. PENTA-chlorophenol treated in our modern plant for protection against decay, moisture and insect damage.

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and engineers has reviewed pictures of 281 postwar telephone buildings to find honor award winners. The photographic collection included nearly every kind of structure — from simple equipment "huts" to multi-storied office buildings.

The panel picked 17 outstanding examples of good design at low cost as honor winners. Sixty-five others were given merit awards.

The awards program is part of the Bell System's efforts to improve the architecture of its buildings. It is an extensive project. The Bell companies own more than 15,000 buildings, large and small. They are building new ones and adding to old at the rate of more than 1,000 a year.

"We believe good-looking buildings can be produced at reasonable cost," said H. E. Phillips, building engineer of the American Telephone & Telegraph Co. "Economical buildings are essential to our successful operation.

"We hope this recognition program will stimulate architects who do work for the Bell companies to put forth their best efforts."

Judging in the program was based on such factors as intrinsic architectural excellence, costs and how well a building fits into its surroundings. Architecture that achieved excellence with above-average costs was ruled out of the judging.

Tenn. Association Initiates Monthly Newsletter

The first issue of the monthly newsletter of the Tennessee Telephone Association, "Tenn Tel Talk," made its appearance in February.

The four-page illustrated newsletter, in pamphlet size, has as its purpose to "give in condensed form, news about member companies throughout the state."

Member companies were urged to contribute news of their own activities directly to "Tenn Tel Talk," particularly human interest squibs about employes or subscribers.

The name for the publication was suggested by Ralph Thorne, manager of the Bruceton & Hollow Rock Telephone Co., Bruceton, Tenn.

The first issue contained news of commission actions, company and association activities, and convention plans, as well as an item entitled "Politics . . . A Dirty Word? . . . No" by M. V. Williams Jr., vice president of the Crockett Telephone Co., Friendship.

He urged telephone industry people to be interested in public affairs saying, "If we in the industry don't look out for our own interests, we can be sure that no one else will look after them for us."

Loosen "Frozen" Pole Line Hardware in seconds

KEARNEY
Rust Cutter

Fast... New fast acting chemical compound loosens corroded ferrous nuts, bolts, studs in seconds. Eliminates sawing, speeds your pole line repairs.

Easy... Lightweight push-button can makes Kearney Rust Cutter easy to use on ground or poles. Atomized mist dissolves crystallized rust.

Safe... New Kearney Rust Cutter is completely safe . . . harmless to skin.

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For BETTER CONSTRUCTION — SAFER MAINTENANCE
Specify
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Products
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IN THE NATION'S CAPITAL

Concluded from page 20

statements filed by companies which have used accelerated depreciation for tax purposes.

This applies to all companies registering securities with the SEC under the Securities Act—not just the gas and electric holding companies and their affiliates.

In brief, the new SEC policy provides that where a company has taken advantage of the so-called fast depreciation deductions allowed under the internal revenue act of 1954 (either §167 or §168), it cannot show its temporary tax "saving" as a credit to earned surplus. The SEC feels that to allow such tax credit to earned surplus would be misleading to investors, because eventually the company will have to pay higher taxes (assuming the same tax rates), because the deduction for depreciation will have been largely used up. The new policy—which the SEC has had under study for nearly two years—goes into effect on Apr. 20.

The way this problem has been created in the past worked out something like this: A company would take its large depreciation deduction and pay a lower tax during the early years of the plant investment on which the deduction was allowed.

It would then show such tax "savings" as a credit to surplus. This had a tendancy to overstate the earnings position for the casual investor. He would find out later—after the deduction was largely used up—that the increased tax liability during the later years of the plant life would swiftly eat up the so-called "savings."

The new policy does not set up any new accounting rules or attempt to tell any company how to keep its books of account. It applies only to companies required to file financial statements with the SEC.

Public utilities, which are sometimes required by state or local regulatory authorities to keep accounts in a different way from that prescribed by the SEC, will be permitted to do so. The SEC made a special ruling on this—relaxing its old Rule 28 (under the Public Utility Holding Company Act) requiring strict conformity between financial statements and books of account.

Restorative

"Some relaxation is necessary to people of every degree: the head that thinks and the hand that labors must have some little time to recruit their diminished powers."—BERNARD GILPIN.

Whatever your brush problem

Line?

Roadside?

Right-of-way?

WEEDONE can solve it!

With the right background—Chemical control of weeds and brush has developed along established lines of procedures and practices. Amchem initially pioneered the major advances in the field, has originated many of today's accepted procedures and products for efficient, economical weed and brush control. Your problems are in *experienced* hands when you hand them to Amchem!

With the right approach—Amchem's corps of weed and brush specialists are basically application specialists. Combining comprehensive theoretical and practical experience they are able to offer all industry a realistic approach to *any* weed or brush problem. These specialists have developed a variety of efficient weed and brush eradication programs over thousands of miles of line, roadside and right-of-way areas once choked and inoperable due to infestation.

With the right product—Amchem's tremendously diversified product line is your assurance that the right weed and brush killer is available and will be utilized for your specific problem. Weedone Brush Killers, for example, have been used in the field for years and proven eminently successful in eliminating weeds and brush wherever they are a problem. Why not bring your problems to Amchem?

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AMBLER, PA.

Please send me copies of your "Brush Control" brochure and full information on the uses of Weedone Brush Killers.

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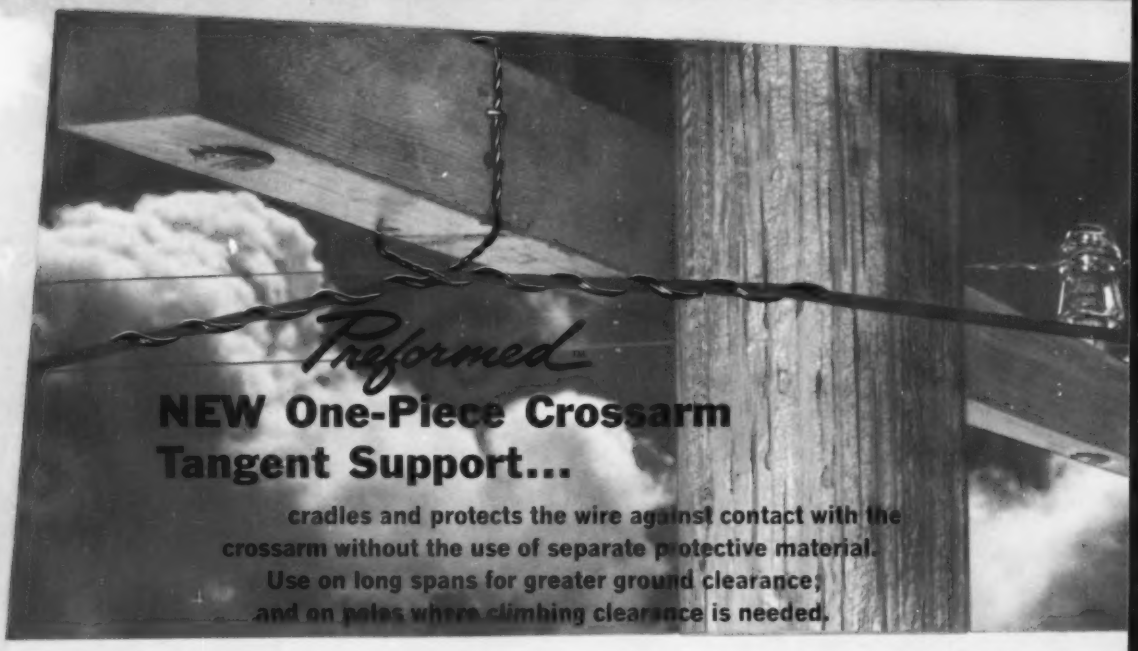
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cradles and protects the wire against contact with the
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Use on long spans for greater ground clearance;
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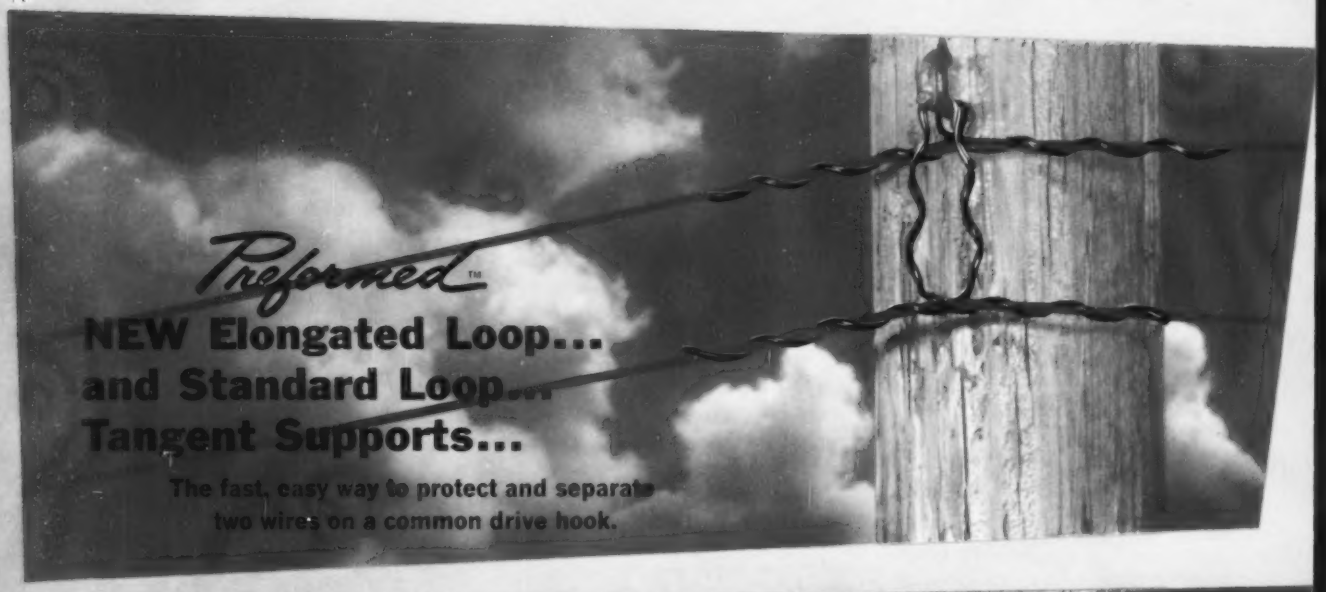
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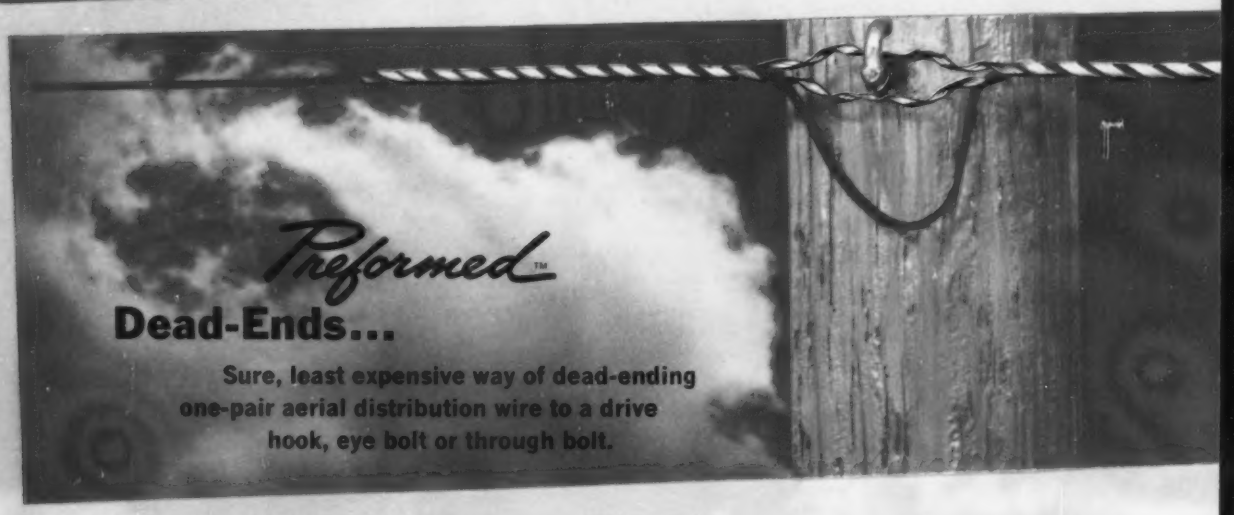
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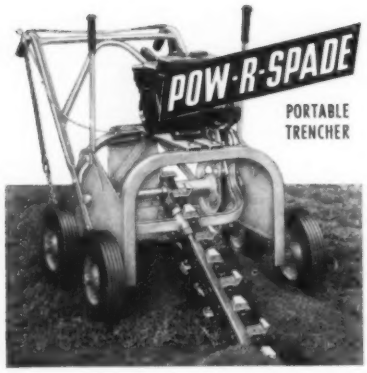

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- Stampings has over five year's experience in building trouble-free, productive trenchers.
- More in use than any other in its class.
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Pow-R-Spade Guarantees Product and Performance!

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- Low cost per foot—more profit per job.
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- Cuts neat trenches—easy back-fill.
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COMPOUND

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Special Purpose Tools To Specifications — Catalog on Request

Over 600 various items of Line Construction Tools, Maintenance & Pressure-Testing Equipment in stock for immediate shipment

Anaconda Sets Up Defense-Electronics Service

The formation of a new branch of service was announced on Mar. 2 by the Anaconda Wire & Cable Co. It is called the ADES program—the name derived from the initials of the phrase, Anaconda Defense-Electronics Service.

ADES is organized to provide Anaconda's customers in the missile, space, aircraft and electronic industries with technical engineering help and commercial services on their wire and cable needs.

Specifically, Anaconda says the two ADES units will:

Bring information to the customers from Anaconda's engineering departments and three research and development laboratories.

Bring customer requirements back to these development centers.

Act as liaison for rapid quotation, fast order-entry and order expediting between customers and Anaconda's nine cable mills.

Headquarters of the service branch will be located at 2201 Bay Road, Redwood City, Cal., the site of the Sequoia Wire & Cable Co., a new Anaconda subsidiary on the West Coast.

Those companies located in the middle west and eastern sections will be served by a group located in the east at Anaconda headquarters, 25 Broadway, New York, N. Y.

Walter G. Wright Elected To Board of ASA

Walter G. Wright, vice president-operations, General Telephone & Electronics Corp., has been elected a member of the board of directors of the American Standards Association, it was announced on Feb. 25 by John R. Townsend, president of the ASA.

Mr. Wright has been in the telephone industry since 1924. After five years of engineering experience with Bell companies, he joined the International Telephone & Telegraph Corp. in 1929. He held positions in both engineering and operations during the 22 years with the International System, spending 10 years with their South American properties.

In 1951 he joined the General System as chief engineer for the General Telephone Co. of Michigan.

From 1953 to 1957 he served as president of General Telephone Co. of the Southwest.

He was elected vice president-operations, General Telephone Corp., in May, 1957, and retained that position with the formation of GT&E in 1959, following General's merger with Sylvania Electric Products, Inc.

more QUALITY than meets the eye...

Colors of insulation on conductors in

SUPERIOR Telephone CABLES

are electrically balanced

High molecular weight polyethylene insulation is factory-compounded to guarantee uniform electrical characteristics between each color in the code.

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4487

Helpful Literature

PRINTED CIRCUITS—A new bulletin on printed circuits has been issued recently by the Whitney Blake Co. The folder discusses the benefits from the use of printed circuits and provides useful information needed when quotations are to be made.

Also included are:

Types of insulating materials and the current capacity in relation to width of copper conductive pattern.
The choice of metals available for the conductive pattern, as well as the types of plating recommended to achieve desired results.
Recommendations covering materials available for switch and contact patterns.
A list of the company's facilities and a partial list of companies served.
Request HL559.

•

INDEX OF TRANSISTOR CIRCUIT APPLICATION REPORTS — The Lansdale Division of Philco Corp. has published an index of Application Laboratory Reports covering the prevailing important and practical applications of transistor circuitry.

The laboratory reports listed represent a selection of circuit applications currently receiving the broadest industrial interest.

Both the general transistor information and specific intelligence gleaned from tested circuitry used for applications of the following Philco transistor families are covered:

Micro alloy diffused-base (MADT).
Micro alloy (MAT).
Surface barrier (SBT).
Silicon surface alloy (SAT).
Medium frequency.
Medium power audio.
Micro-miniature.
Pulse amplifier.

Documentation of test processes and results covered by each of the laboratory reports is supported by curves, equations, schematics, projected parameters and theory.

Descriptive paragraphs on the content and scope of reports available are given in the index for reference.

The index lists 84 application laboratory reports, available free.

Reports are listed by the class of application, by transistor family and by each report's designation numeral. Request HL560.

•

ANCHORS AND FASTENERS—A new pocket-size catalog listing the complete Diamond line of anchors and fasteners for masonry and hollow walls is available from the Diamond Expansion Bolt Co.

The catalog covers: "Red Seal" machine screw anchors; Diamond "P" lag screw expansion shields; Keystone machine bolt expansion shields; "4-D" closed back machine bolt expansion shields; "N" star type masonry drills; Multi-Size wood screw anchors; Super-Grip stud type expansions; D H D hammer drive anchors (nail type); Di-Forge percussion-type masonry drills; Ram heavy-duty lead-iron anchors; Diamide carbide-tipped masonry drills; and "Wing-Ding" hollow wall screw anchors. Request HL561.

TOOL LINE—A new, 8-page fully-illustrated Bulletin, E-240 has been issued by the Greenlee Tool Co., which describes tools of particular interest to the telephone, and other industries.

More than 60 Greenlee time-saving tools are covered, including:

Lightweight hydraulic conduit benders.
Hydraulic pipe pushers.
Cable pullers.
Radio chassis punches.
Hydraulic knockout punch drivers and sets.
Portable, high-pressure hydraulic power pumps.

Greenlee's complete line of power bits, pipe bits, auger bits, chisels and allied tools is also included.

Operating advantages, unusual features and complete size range are listed for each tool. Request HL562.

•

TESTING GROUNDLINE TREATING MATERIALS—Osmose Wood Preserving Co. of America, Inc., now has available its Memorandum No. 32, "Testing Groundline Treating Materials."

George B. Fahlstrom, of Osmose's research division, points out in this leaflet the importance of insuring that test stubs or sections possess the same moisture content as the groundline area of the older in-service poles to be tested.

Mr. Fahlstrom comes out in favor of using a moisture meter to facilitate approach to the aforementioned same moisture content. He tells why, and makes other pertinent observations. Request HL563.

•

SAFETY PULL HOISTS—The Coffing Hoist Division of Duff-Norton Co. has put out an illustrated catalog showing six models of the new ratchet-and-pawl design RA series safety pull hoist.

The four-page, two-color brochure includes specifications, prices and dimensions for the ¾-ton, two 1½-ton models, the 3-ton, 4½-ton, and 6-ton capacity safety pull aluminum lever hoists.

Accessories for all models are described. Request HL564.

•

TRANSCEIVERS—A revised brochure on the transceivers manufactured by Acton Laboratories, Inc., subsidiary of the Technology Instrument Corp., is now available.

The literature includes data on the new Model TCV-273 transceiver with six fixed-frequency channels and six fixed-frequency transmitting channels on a single switch.

A new high in selectivity, the company says, has been built into all its ALI transceivers. Acton Labs indicates it takes a signal 10 times as strong on an adjacent channel to interfere with the channel in use. Request HL565.

TELEPHONY PUBLISHING CORP.
608 S. Dearborn St.
Chicago 5, Ill.

Please have the manufacturer send me without obligation the literature indicated by the following numbers:

HL559_____; HL560_____; HL561_____; HL562_____;
HL563_____; HL564_____; HL565_____.

Name.....

Company.....

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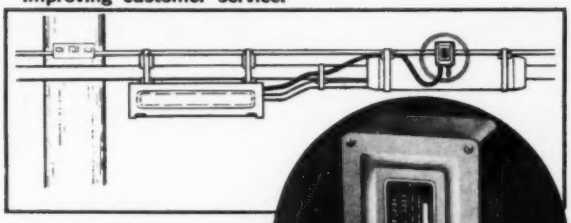
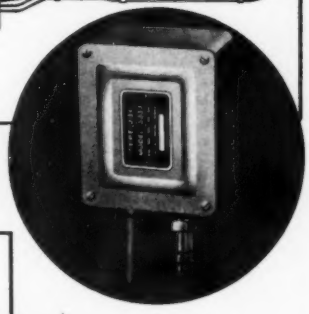
3/12/60

Protection for PRESSURIZED CABLE SYSTEMS

with U.E.'s improved, compact Pressure Guard as the proven aid for reducing cable maintenance costs and improving customer service.





Cable Mounted
TYPE J31-5333

Pole Mounted
TYPE J31-5338

WHY A PRESSURE GUARD IS ESSENTIAL FOR MAXIMUM EFFICIENCY IN PRESSURIZED CABLE SYSTEMS

- The Pressure Guard monitors and protects cable at all times, not just periodically.
- The Pressure Guard ensures routine sheath breaks are detected and localized prior to service disruption.
- The Pressure Guard provides one more value that may be detected at the test desk.
- The Pressure Guard transmits its signals via working subscriber lines rather than requiring special circuits.
- The Pressure Guard reduces cable maintenance costs and improves customer service at very low cost.
- The Pressure Guard's low cost permits liberal usage for maximum protection.

SPECIFICATIONS

TYPE J31-5333

Field Adjustment Range	0 to 10 PSI
Factory Setting	2 ±¼ PSI on falling pressure
Pressure Response	4 ±½ oz.
Proof Pressure	30 PSI
Electric Rating	0.01 amp 100 V DC
Load Resistor	Carbon composition 270,000 OHM 1 watt

Drop Wire .....6' Type SJO#18 stranded 2.0 conductor
Pressure connection: ⅛ NPT (⅛ x ⅛ elbow provided separately; usually not required with direct sleeve mounting).

TYPE J31-5338

Same as above with the addition of pole mounting provisions and 6' of copper tubing.

Available through regular suppliers of telephone equipment. Contact them for new Type J31 Pressure Guard brochure. Catalogs covering other UE pressure, vacuum and temperature controls also available.

UNITED ELECTRIC

CONTROLS COMPANY
85 School St., Watertown, Mass.

SUBSIDIARIES

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Dorval, Quebec, Canada

United Sensor & Control Corp.
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COOL PERFORMER

when the heat's on!

Despite temperature extremes, you can depend on Kennecott lead-alloy sheathed cable to give perfect service! Its exclusive "Young Process" lead sheath and precision-wound tape insulation shrugs off heat damage that would greatly shorten the life of other types of insulation and sheathing. Proof of this is that Kennecott Telephone Cable lines have been giving superior service since 1897.

IT'S KENNECOTT TELEPHONE CABLE

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Pittsburgh 33, Pa.
Portland 5, Oregon
Roanoke 15, Va.
St. Louis 10, Missouri
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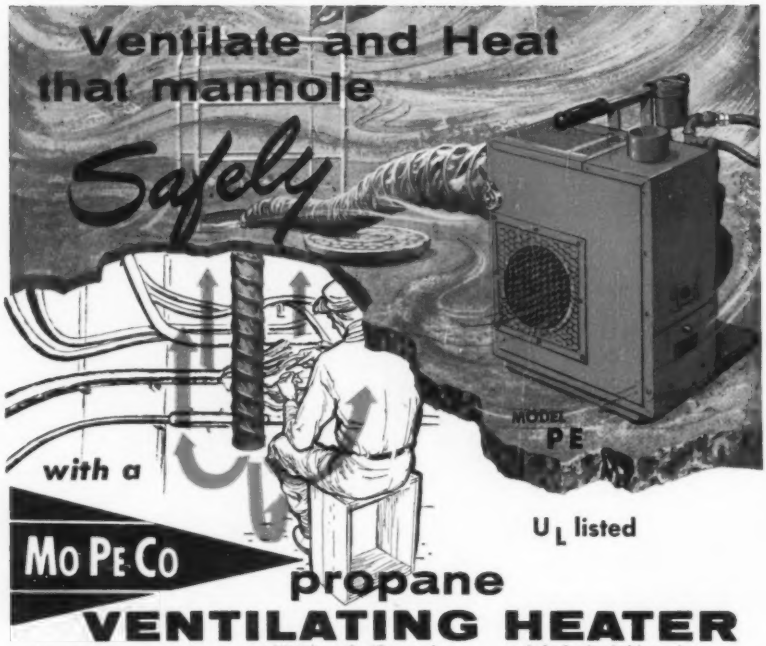

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- Propane or Butane fuel
- 10' L.P.G. hose standard
- Safe fresh air blown into manhole at all times.
- Eliminates manhole explosion and oxygen deficiency accidents.

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North to Make Electronic Switching Centers for USAF

William Tucker, president of North Electric Co., has announced that North is to be responsible for the design and manufacture of fixed and mobile electronic communications and switching centers for the General Electric Co. to be used in the U. S. Air Force Project 412-L.

This is reported to be the largest electronic switching equipment production order, either military or commercial, ever awarded anywhere in the world. Total value was not released, but it is understood to be in excess of several million dollars.

General Electric, Heavy Military Equipment Division, Syracuse, N. Y., the prime contractor for the 412-L project, chose the North technical approach over many others submitted, Mr. Tucker stated. The over-all 412-L system is a ground environment complex containing major radars, data processing, communications and other special types of equipments. North Electric's contribution to the development of this Air Weapons Control System consists of advanced electronic switching techniques capable of providing communications and control for a wide variety of defensive and offensive weapons to answer needs of air space management outside the continental United States.

According to Mr. Tucker, bids were hotly contested, since the concept adopted may well establish the design for future world-wide military as well as commercial communications networks. He stressed, however, that due to the relatively high cost, commercial application of electronic telecommunications will not be available for a number of years.

Mr. Tucker also said: "North Electric's concept introduces many unique solid-state switching techniques to the switching art. The new design requires less space and is considerably lower in price than similar electronic switching systems developed to date."

North Electric is currently working on a number of large world-wide military projects. These include contracts for Thor and Jupiter Missile communications and launch control equipment in England and Italy; switching centers for the Ballistic Missile Early Warning System in Greenland and Alaska and for the Moroccan-Spain-United Kingdom Tropospheric Scatter communications system. Equipment is also in production for Technical Control and Air-to-Ground systems for the global AIRCOM "Quick Fix" communications modernization program.

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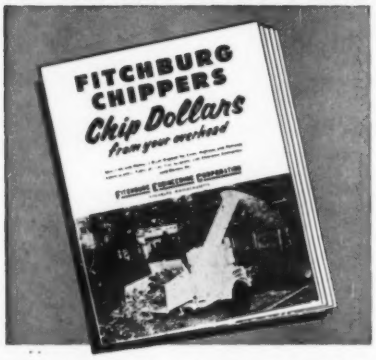

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Signal Corps Gets First Electronic Switching Unit

The first completely electronic communication switching center ever designed and built specifically for military field service has been delivered by the Stromberg-Carlson Division of General Dynamics Corporation to the U. S. Army Signal Corps, Fort Monmouth, N. J.

Utilizing the fast-as-light operating speed of transistors and diodes for maximum efficiency and flexibility, this new switching center will provide the high speed communications required by today's modern highly mobile Pentomic Army.

The unit shipped is known to the Signal Corps as an AN/TTC-12, and is a 200-line "local" switchboard. A number of other similar communication centers, in three different types, are being built now by Stromberg-Carlson for the Signal Corps, and are scheduled for delivery later this year. These include AN/TTC-13 long distance switchboard, and the AN/TTC-15 "tandem" or divisional area switchboard. These units, in conjunction with the TA-341/PT transistorized field telephone, also designed at Stromberg-Carlson, comprise a completely new field communication system designed for maximum speed, flexibility, compactness and reliability.

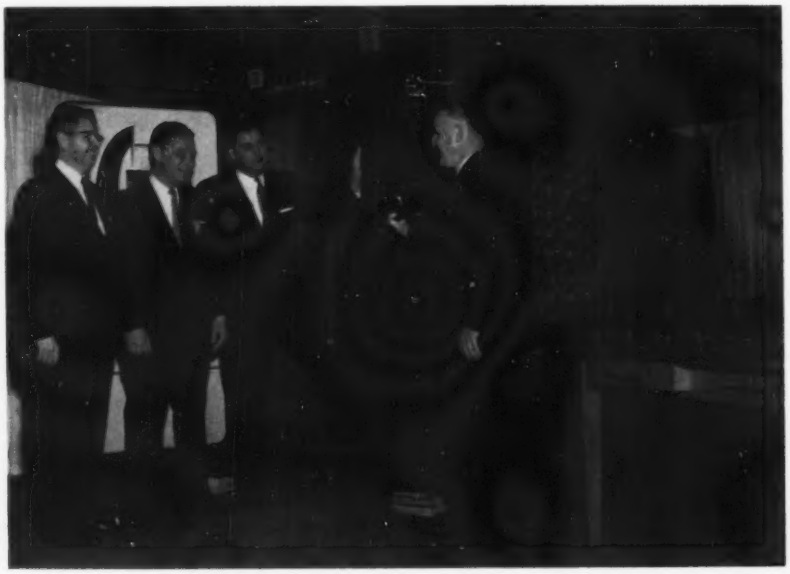
The AN/TTC-12 communication center was turned over to Col. Robert F. Wilson, commanding officer of the Fort Monmouth procurement office, by Stromberg-Carlson President James D. McLean at the Telecommunication Division's plant in Rochester, N. Y. It was trucked directly to Fort Monmouth for evaluation tests. Other units of the communication system will be delivered as they are completed to Fort Monmouth and Fort Huachuca, Arizona, for systems field tests by the Signal Corps.

Each switching center is completely contained in a compact aluminum shelter or "hut," approximately 7 feet square and slightly less than 12 feet long. The shelters are designed for quick and easy transportation by truck, plane or helicopter.

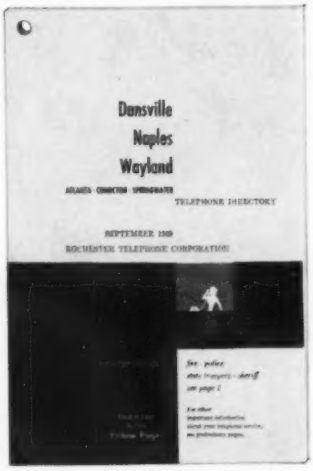
For maximum utilization and flexibility, as well as for the highest quality of transmission, this new communication system uses four-wire switching and four-wire transmission throughout. The electronic switching center provides the very ultimate in high-speed switching using a time-division multiplex system, it is reported.

Virtually any kind of transmission facility can be used in conjunction with the electronic switching centers, including radio relay, microwave, carrier, or wire line, it is said. An added advantage of the four-wire electronic switching system is that it can handle, not only voice and teletypewriter communication, but also can transmit facsimile, high speed digital data, or slowed-down video signals.

The "local" switchboard accommodates 200 lines to individual terminations, and also has 30 trunks to a long



Col. Robert F. Wilson (right), accepts first completely electronic communication switching center designed and built by Stromberg-Carlson Division of General Dynamics Corporation for the U. S. Army Signal Corps. Stromberg-Carlson executives participating in the delivery are, from left: John H. Voss, vice president and general manager of the Telecommunication Division; Allan R. Shilts, vice president and general manager; and James D. McLean, president.



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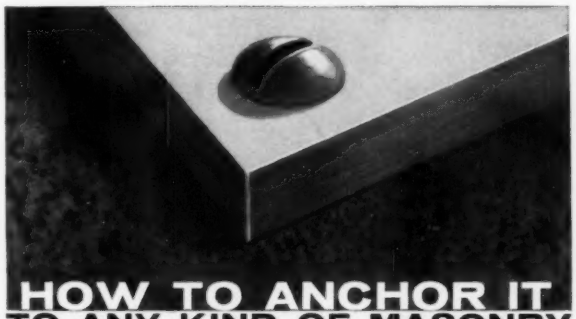

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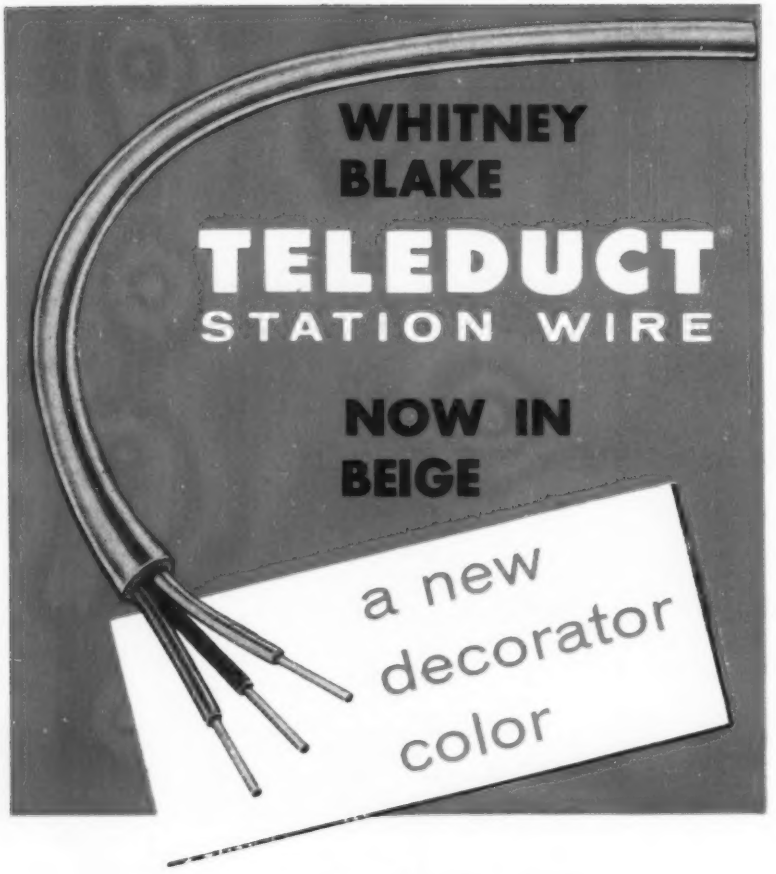

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distance switching center, and 50 trunks to other local and tandem switching centers. As many as 60 calls can be handled simultaneously. The local connection can be made by either wire or radio link.

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The quality of transmission throughout this new type of communication system is exceptionally high, it is said. As an example, a telephone call can be placed through as many as 11 switching centers, and over many miles of cable, radio relay or other transmission facilities, without noticeable degradation of quality.

Since all circuit switching is performed electronically, by solid-state devices, the system has a very high order of reliability, and little maintenance is required. All components are mounted on small printed circuit cards of the plug-in type, so that, when faults occur, they can be quickly located, and the faulty card replaced.

From the military point of view, one of the greatest advantages of the electronic system is its compactness, its reliability and the small amount of logistic support it requires. In comparison with a conventional 200-line manual switchboard such as is in common use today, the electronic system requires only one-sixth as many personnel, and one-sixth as much logistic support.

GE Appoints J. M. Barnes System Design Engineer

General Electric's Communication Products Department at Lynchburg, Va., has appointed John M. Barnes as systems design engineer for two-way radio equipment.

Mr. Barnes has specialized in the design of transistorized mobile radio equipment, including portable and vehicular communication devices.

He is a member of the American Institute of Electrical Engineers and of the Institute of Radio Engineers.

Mr. Barnes is a native of West Barrington, R. I. He attended the Barrington High School and received his

bachelor's degree in electrical engineering at the University of Rhode Island.

General Directory Reports Changes in N. C., Wash.

Paul E. Schewe has recently been transferred from division manager of the Spokane, Wash. division of General Telephone Directory Co. to division manager of the Durham, N. C. division.

P. E. SCHEWE

Mr. Schewe started with the Directory company in 1947 as a sales representative in Texas. He has received promotions to senior sales representative, sales supervisor, assistant division manager, and in August 1958 was made division manager in Spokane.

T. J. MERTENS

With Mr. Schewe's transfer to Durham, T. J. Mertens has been promoted to assistant division manager in charge of the Spokane division. Mr. Mertens has been with the company six-and-one-half years, and for the five years prior to his promotion, he was a sales supervisor in the Spokane division.

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Graybar Electric Reports Four Managerial Changes

W. B. Whaley, midwestern district manager for Graybar Electric Co., Inc., announces three managerial appointments in his district.

J. L. Bevers becomes manager at Omaha; L. S. Smith has been named manager at Wichita; and H. J. Van Westenberg is sales manager at Colorado Springs.

In Graybar's Allegheny district, H. E. Wilkinson Jr. has been named manager at Buffalo, according to J. E. Carroll, district manager.

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Arvel is one of our "revenue men" in Herrin, Illinois.

He attended Southern Illinois University in Carbondale, and later served as principal of the elementary school in Benton, Illinois.

After a hitch in the Coast Guard from 1942 to 1945, Arvel returned home and began his career in sales.

It was in 1952 that he joined the General Telephone Directory Company as a sales representative in our Herrin Unit. In 1954, he was promoted to supervisor.

He, his wife and his 13-year-old son make their home right in Herrin. When Arvel is not working, he spends most of his time outdoors. His hobbies are baseball, golf, boating, hunting and fishing. He puts his sports knowledge to good use in his work with the Boy Scouts, home town boys' baseball teams and Church youth groups.

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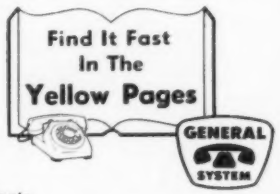

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